

THE ROMANIAN STRATEGY AND THE NEW TECHNICO-SCIENTIFIC REVOLUTION VALUE ENGINEERING

● A DECISIVE OPTION: CREATIVITY LEADS TO SUPERPERFORMANCE ● 2-5 PER CENT OF THE ROMANIAN PRODUCTS WILL RANK AMONG THE FIRST IN THE WORLD UNTIL THE END OF THE DECADE ● FLEXIBILITY AND ANTICIPATION — FUNDAMENTAL CHARACTERISTICS OF THE NEW TECHNICAL HIGHER EDUCATION IN ROMANIA ● THE ENGINEER — A CREATOR OF TECHNOLOGY

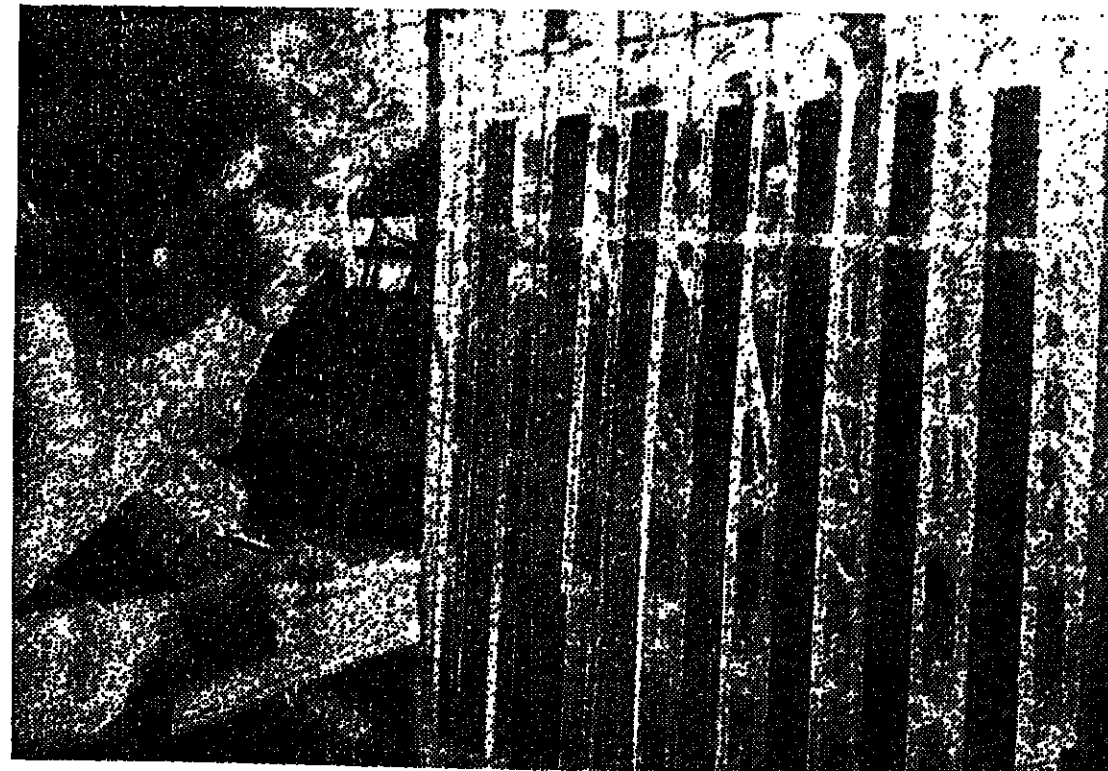
Tomorrow's society depends in a large measure on the level of education today, on the way in which we assume the priority questions which will preserve their importance in future too, on the way in which today's pupils and students — tomorrow's specialists — understand development as a broad process to which they must fully commit themselves.

This was a conclusion also reached by a report of the Club of Rome devoted to education-related questions. Its authors (V.B. Botkin, M. Elmandjra and Mircea Mălița) insist on the idea of education for creativity. What is undertaken in Romania today to this end? Today, therefore for the future.

To begin with, let us mention an event having taken place this autumn: the third National Symposium of Invention Science organized by the Romanian Academy,

through its Invention Science Commission. The event hosted by Iasi brought together over 120 invention scientists and inventors who set forth the main results of their investigations both regarding creative processes and in the field of the theory and practice of heuristic processes and of the industrial application of the fruit of their researches.

DOSSIER



FROM PIONEERING TOWARDS PERFORMANCE

In 1984, in the report of the Thirteenth Congress of the Romanian Communist Party, President Nicolae Ceaușescu demanded that by 1990 about 95 per cent of the Romanian products should be, from a technical and qualitative level, on a par with those existing at a world level, and at least 2-5 per cent of them should outclass the latter.

What has been done in order to meet these parameters of technological and scientific competitiveness? In Romania, the starting point was first of all the revision of the concept of export, relating to the conditions of an unprecedented dynamics of technical and scientific progress in the world. From this perspective, the transformation of the engineering from a conservative, traditional technology into a creative, dynamic process, in which the fundamental role is played by higher education, flexibility and anticipation —

here are two fundamental characteristics of the Romanian technical higher education without which one can no longer conceive the training of experts. Pursuing these goals, the Polytechnic Institute in Iasi opened three years ago the official course of lectures "The Bases of Technical Creation and of Industrial Protection" delivered by Vitalie Belous, D.Sc., from the Mechanics Faculty.

The beginning, although not very remote, does have its importance. It meant the setting up of the first school of invention science. Here, students assisted by their professors and by an auxiliary personnel assimilate the legislation of inventions, the technique of drafting and describing inventions, creation methods and techniques, engineering analysis and synthesis.

The results of this undertaking have been quite spectacular. Suffice it to mention that of the overall number of inventions registered in last country, nearly half were authored by members of the Polytechnic Institute. As part of this achievement, the front place is taken by the Mechanics Faculty — the Mechanics Faculty Department that is, by the "birthplace" of the invention science.



INVENTION TECHNOLOGY

Let us now try to take invention technology "in pieces", with the help of its authors.

A first package of concerns is that of a university nature. It has been decided that as early as their first years of higher studies, students should cover the entire array of engineering activities, from the design to the execution in the faculty's pilot workshops of original products, patented by the teaching staff and by senior students.

Could all students, even the

mediocre ones, become inventors? Would not the level of product research and design drop? These questions were answered by the father of the last invention science, professor Vitalie Belous, who said that: "I am after quantity because this alone can, at a given moment, supply the expected quality, the value leap. Out of 100 commonplace inventions, five are sure to have real value."

Professor Vitalie Belous is aware that the front opened for conquering the redoubt called quality and value engineering will come against numerous obstacles.

"The educational system, on all its steps, from kindergarten to faculty, cultivates convergent thinking, which is hardly adequate for spontaneous or stimulated technical creation. The latter is largely the fruit of divergent combinatorial thinking, of efficient collaboration between the conscious and the unconscious."

Then how can the specialized course of lectures become an open scientific system for accumulating new information and spurring the youths' creativity? In other words, how can students think in a renewing way upon already formed patterns and values?

The professor's answer synthesized the long teaching experience and professional capability of the specialist to whom the supreme reason of being is creation.

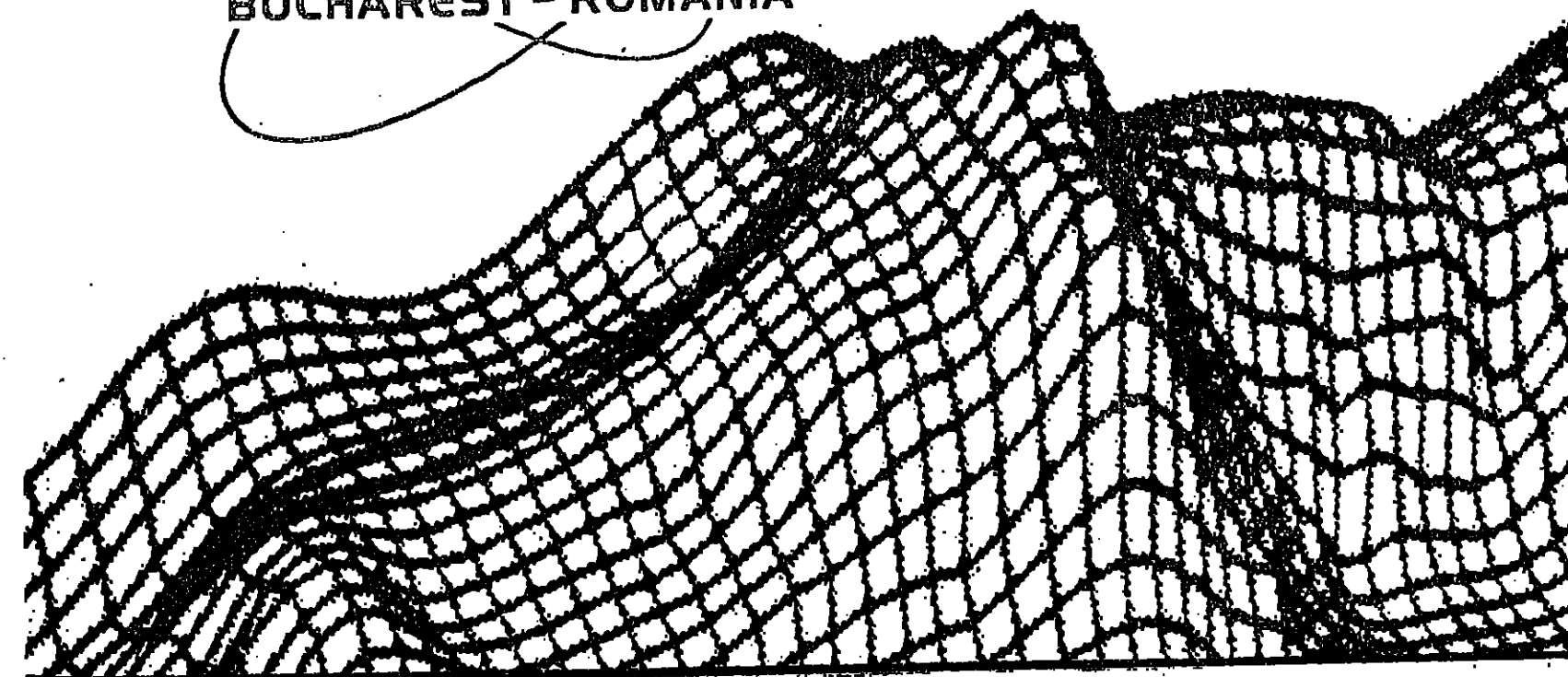
The specialized chapters must be materialized in open diagrams of ideas, morphological moulds or generalised objects and concluded with the assessment of the current stage of technology in the respective field and the sketching of the future development. The professor must always formulate themes of creation for the future engineers; lead them along the winding roads of value engineering; of the skill of creating a maximum of functional responses, an essential objective for any technical creation.

The experience gathered so far by the last department has proved that any abstract technical and organizational nature can be accompanied by pertinently pursuing a new way technological and creative flow. This technological flow sharpens and gives the

ROMANIAN NEWS

FREE
SUPPLEMENT
TO NO
52 (561)
DECEMBRIE 30
1988

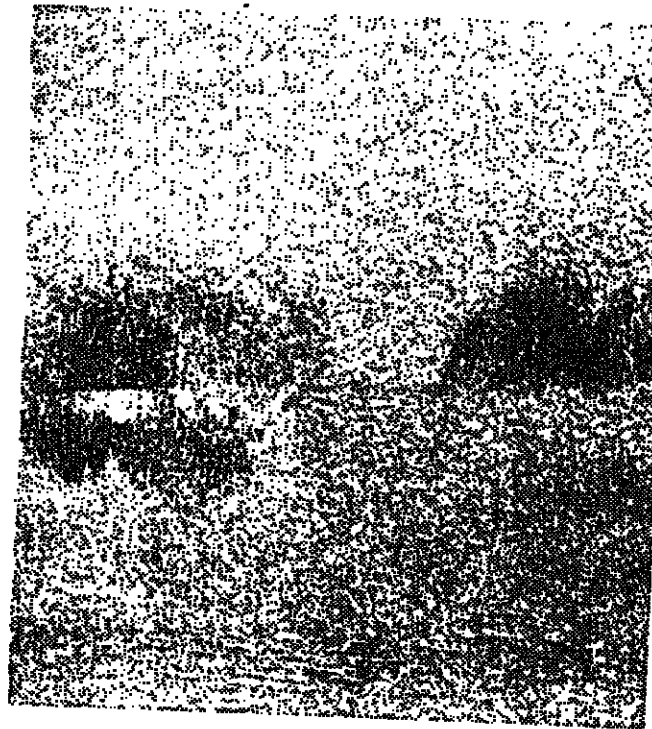
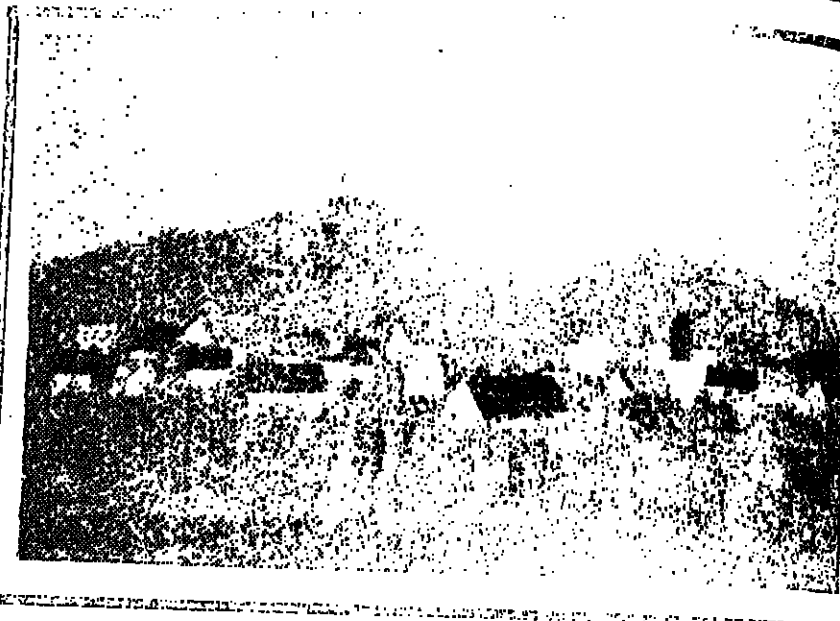
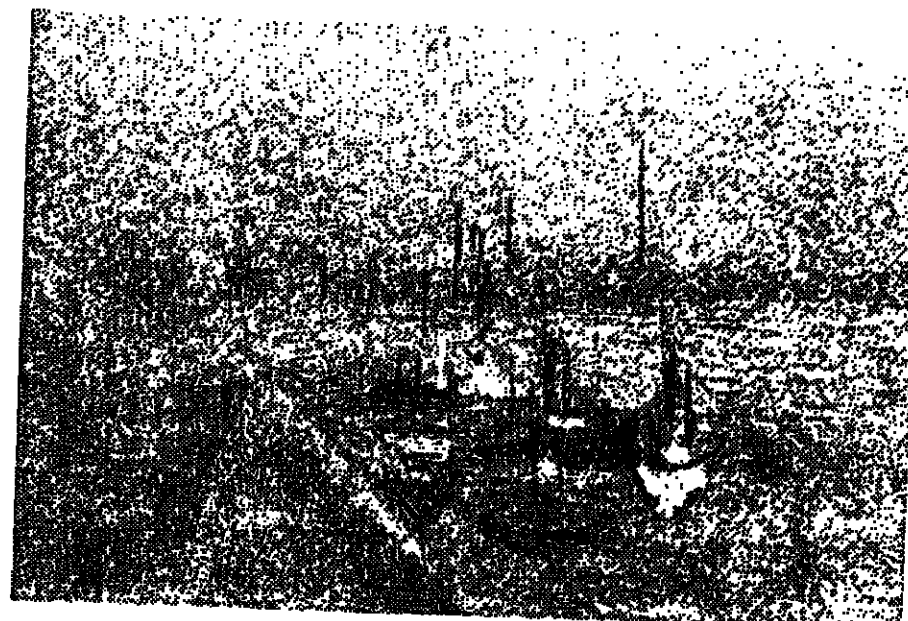
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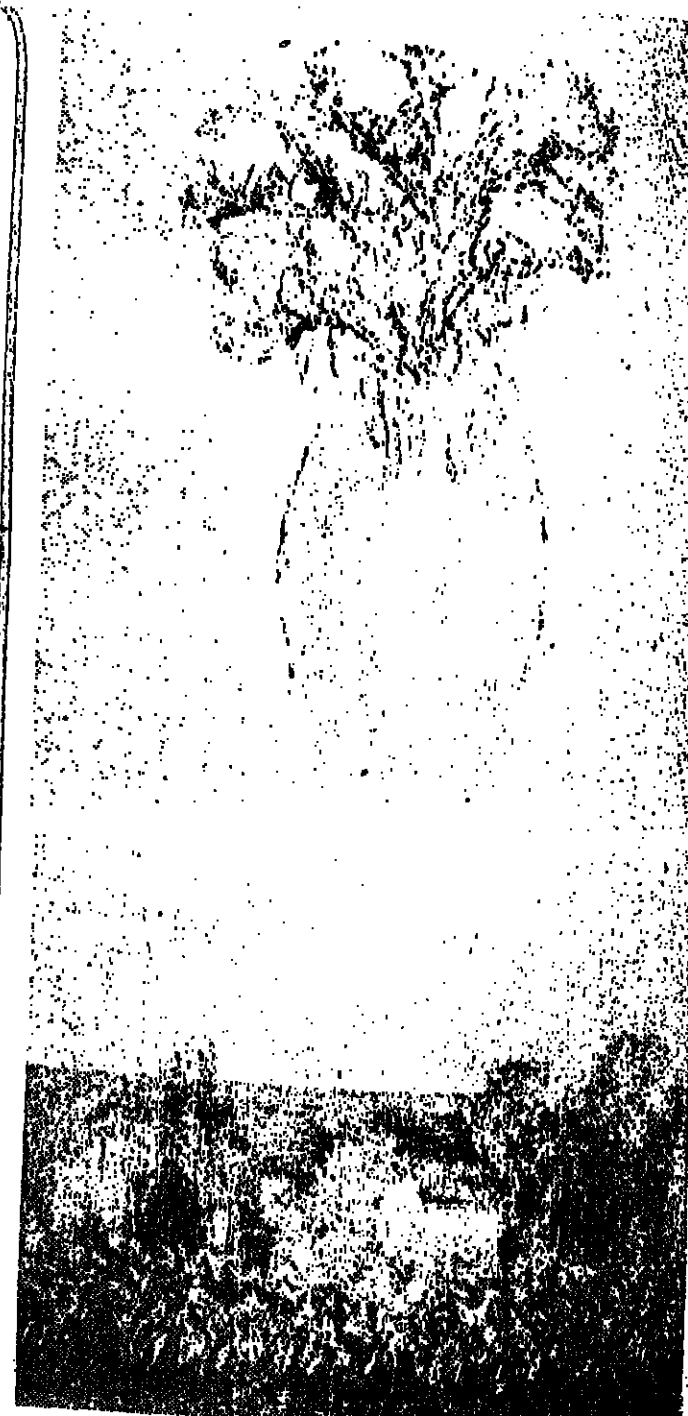
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Ioan Alexandru Boanichi (b. 1938, at Sladilla-Arad), is a member of the Fine Artists' Union, a participant in group exhibitions, displaying works in state and private collections both here and abroad, in West Germany, Canada, Finland, Norway and the USSR. In line with the local tradition, the artist lays stress on colour. In other words, the subject triumphs, first of all through luminosity and intensely affective chromatic commitment. His painting stands out through a solar vibration of tones, through sincerity and originality revealing an inward, moral dimension. The confession felt by the artist with open jubilation has no reserves. However, in order to be convincing, its sincerity looks for specific forms of expression. A pre-eminently landscape artist, deeply in love with the Danube Delta and his native place at the foot of the Zarand Mountains, Boanichi does not care too much for artistic trends and theoretical programmes: he would rather paint himself. Nevertheless, he admires the great lesson of Alexandru Ciulea from a distance which he thinks holds him best. He does not transcribe reality through a minute study, he reconstitutes its general outlines from his memory, with a keenness compelling the eye to admire its accurate description. The artist has a temper for which colour is the supreme means of expressing the relation between individual and nature. Under the quiet, cordant chromatic construction one can perceive the artist's anxiety, his legitimate aspiration after deciphering things known to his eyes, to uncover their poetic meaning. He does not hide his desire to build a synthetic, concise structure, supported well enough by the sense of the construction proper. Colour is interpreted as a fairly balanced architectural element, unveiling an adequate understanding of the equilibrium of forms. Things studied for a long time turn into expressions of lyrical confession on canvases.

PAUL ANTIM

In the photos: flowers, landscapes from the Danube Delta and the Apuseni Mountains, the painter being a great admirer of his native land, as well as of the entire Romanian space of which the Danube with its three branches flowing into the Black Sea and the Delta proper hold a special place in his heart.



ROMANIAN NEWS
INFORMATION AND COMMENTARY
WEEKLY PUBLISHED BY
THE ROMANIAN NEWS AGENCY
AGGPRUS

IN ENGLISH AND
FRENCH. Editorial and
administrative offices: 1, Rue
Schiller, Bucharest, Phone
17 00 20. Foreign readers can
subscribe through
FRANCIA, 10, rue de la
Liberte, 75001 Paris, or
Bucharest, 51-55, Grivitei St.

ROMANIAN NEWS

INFORMATION AND COMMENTARY WEEKLY PUBLISHED BY THE ROMANIAN NEWS AGENCY, AGGPRUS

LA MULTI ANI 1989!

Thursday, December 29 right before the new year, thousands of children and youths came to the headquarters of the Central Committee of the RCP in order to pay the homage of the country's young generation and to address the traditional "A Happy New Year" wish to the General Secretary of the Romanian Communist Party, Nicolae Ceausescu, President of the Socialist Republic of Romania, and to Elena Ceausescu.

Participating in the "Plugus" celebration were full and alternate members of the Executive Political Committee of the CC of the RCP, secretaries of the Party Central Committee, representatives of the leadership of the student and young pioneers' organizations as well as people working in enterprises and institutions in the Romanian capital.

After the celebrations which proceeded according to a fine folk tradition, groups of well wishers in exquisite folk attire escorted to all the zones of the country joined President Nicolae Ceausescu, Elena Ceausescu and the other members of the party and state leadership, to wish them well in the "sorepva" tradition.

To the applause of the attendance, President Nicolae Ceausescu took the floor.

The young well wishers were then invited into the headquarters of the Central Committee, where they were offered new year's presents.



NICOLAE CEAUȘESCU'S ADDRESS

In an address made on December 29 on receiving the representatives of the Romanian children and youth, who went to the big square in front of the CC of the RCP headquarters in order to extend to him the year's wishes, according to popular tradition, President Nicolae Ceausescu showed that the Romanian people ended the year 1988 with important results in all domains of activity. Everything we have achieved this year as well — just as, in fact, all along the period of so-

cialist construction, the speaker said, is the result of the policy of our communist party, it demonstrates the correctness of the policy and practical activity of the party that applies the general principles of socialism, the general laws of human society's development to the country's realities, and demonstrates our people's force.

Noting that the year 1988 was a year of deep-going changes in international life, in the world balance of forces and

assuming that certain steps were taken, a beginning in the negotiated settlement of trying conflicts and issues, the Romanian head of state declared: We must say it openly that in general the expectations of our people, of all peoples of the world were not accomplished to the full, the international situation is still rather complex and grave. As the danger of a world war that would inevitably turn nuclear is still maintained, disarmament has to be achieved, nuclear disarmament above all, and a world free of weapons and wars has to be built, the speaker stressed.

Romania, our people, President Nicolae Ceausescu mentioned, will do their utmost in order to contribute to the accomplishment of these aspirations of the whole of mankind, for a united Europe, in full freedom, of free and independent nations, a Europe free of weapons, a Europe of peaceful work, for collaboration in the Balkans, for the settlement of

the world's complex issues only by negotiations. We wish and will do our utmost for the year 1989 to bring concrete achievements on the path to peace, collaboration, economic and social progress, the speaker stressed, stressing the imperative requirement of a real passage to a new thinking, to a new economic policy, to a new policy in international life, of a resolute end to the policy of strength and distrust, of "high fences" in other states' affairs.

AN INTERVIEW GRANTED BY NICOLAE CEAUȘESCU

- IN BUILDING THE SOCIALIST SOCIETY THERE ARE NO "MODELS" OR "PATTERNS"
- THE MODERNIZATION OF LOCALITIES IS A PROGRESS MEANT TO ENSURE DIGNIFIED LIVING CONDITIONS
- THE EFFECTS OF THE WORLD ECONOMIC CRISIS DID NOT HINDER THE CARRYING OUT OF THE COUNTRY'S DEVELOPMENT PROGRAMME
- ROMANIA WANTS A UNITED EUROPE OF INDEPENDENT AND FREE NATIONS

THE REPUBLIC 41

We celebrate 41 years since the proclamation of the Republic in Romania, on December 30, 1947. The Romanian people's dream was accomplished then of being the only master of its fate, of living free and dignified in a free and dignified country, independent and sovereign. The years which followed were years of hard work for the entire people. On the path on which the nation had engaged on December 30, 1947, the Ninth RCP Congress of 1965 opened a new page of history by electing Nicolae Ceausescu to the head of the party, then of the state. The most fruitful age in the Romanian millenary existence, the age of building a new Romania is witness to his name. (see page 2)



LA MULTI ANI 1999!

"La mulți ani!" (Happy New Year) remains a syntagm which cannot be translated. At the table placed at the centre of the New Year's Eve celebration, the night of the passage from one period of time, full of accomplishments and joys to another one which should be richer and better, "la mulți ani" translates the wish that all those who are seated around it should meet on the occasion of many other such celebrations. "La mulți ani" wants to say, in this special context, a long, happy, rich life, with many fulfillments. The traditional New Year's Eve celebration probably has its equivalents on all meridians. In the whole world, people, under the sign of hope, wish that the coming year be a happy one. The wish coming from Romania, addressed to all our readers, is that this thought be translated into many years of peace, understanding, satisfaction and joy.

Folklores include the whole richness of the traditional Romanian customs concerning the New Year in the category of "passage ceremonies". Should we follow them in this very rich and colorful material? Is it a very arduous quest? Maybe some other time.

Undoubtedly we are speaking about the still vivid forms of old customs, of old feelings, of the feeling of changing a state of being, of crossing a threshold, the feeling of the passage into the new were probably born at the same time with man's self-consciousness. It remains a fundamental feeling despite the deep changes undergone by the behavioristic attitudes of modern man. Man's life is strengthened by the frustration imposed by the tyranny of the accelerated and repeated changes in his life. In the space of the modern age. No wonder that maybe, modern man meets the ancestral thrill on the threshold of change more and more often. The sense of the measure of time, the notion of the calendar, is identified with the cosmic measure, the great, infinite cycle of life, multiplication, death, rebirth, the eternal, forgotten, memory, the future.

The explanation of the fact that the spirit of the old customs

alive in most Romanian villages, and concerning the New Year's Eve and the first lunar month should be looked for here, And at least some of them, thoroughly included in the spiritual life of another type of the urban collectivity have the chance to be perfectly adapted to the new environment and give ones and for all the specific colour of the village the New Year's Eve in Romania, despite an obvious tendency of standardizing the most international celebration.

It is natural that the symbols of these customs should be extremely old elements. The richness is expressed, in a metaphorical context belonging to illness and stunting, in thousands of wheat stalks, in a flood of apples, rivers of milk, Uncle of lumber. The children who believe, at the age of innocence, that milk is made from powder, make a very precious gift, a very best wish today, their parents and relatives: electricity, hammers, doctors, information, socialism, cities, programmes, cars, and so on. The children, glibly full of lamb and green full of fruit.

That which once represented an imagination in the deeper meaning of the term, still exists

THE "PLUGU\$OR"

The "pluysor" (little plough) is another specific custom which goes all across the wide Pacific Oceanian territory, under various local variations. Traditionally, the "pluysor" was formed only by groups of youngsters, or even grown-ups, but now, this custom has been taken up by groups of children, in all parts of the country.

On New Year's Eve, a plough would be beautifully decorated and the best looking oxen would be harnessed to it. In most of the occasions, a fir-tree would be attached to the plough, on whose branches fruit, wool yarn and colored decorations would hang. The waiis would stop with their plough in each yard, and the head of the group would recite a ballad — a wishing, telling of a legendary character, Brother Trajan, embodying all the qualities of a good householder, who for this very reason, benefitted by abundance and fabulous accomplishments. The waiis would simulate wheat sowing, and the wishing would also stand for an incantation for the fertility of the soil.

In some places, the decorated plough no longer appears. The "pluysor" has remained a ballad-wishing, preserving the original text. But the waiis carry whips and cow bells, used in a masterly way, whose specific sounds accompany the "chorus" of the ballad. And there are still numerous places, towns included, where waiis carry an old decorated plough.



rates with wheat grain, simulating sowing, with green wheat sowed in special pots and springing in the light of the apartment building's loggia, with the first lambs brought from the neighbouring villages. The incantation remains today in the children's excitement in the eve of holidays, the groups of waits singing their simple tunes in front of lighted windows, the coloured costumes, the white masks.

Because the main role held by children in all New Year's Eve celebrations comes from and is based on the old Russian tradition. And from this point of view we meet and remain close to the "foreigners", fundamental logic. Indeed, who else could be asked to carry the new year and announce the change (not children). Obviously, flooding today in Dushanbe or in any other Romanovian town a folk costume is not very difficult. But the wishes for the New Year must be made with such a euphony, in such a feeling of the show, in closely connected to the national character, celebration and the show.

But, beyond this show we can perceive their conscious attachment to tradition. No doubt, these children are aware that they reproduce something that once was performed by their parents, grandparents and ancestors. As a matter of fact the children's preparation for the celebration is a task to be accomplished exclusively by themselves. Maybe it is one of the first attempts to integrate oneself in the collective memory of the community, inspired called when



lory. Anyway, even the most colourful and minute descriptions could hardly illustrate the picturesqueness of these customs. The masks of the wau-waus, Marumores and Vranchevci must be seen on the spot. The same goes for buhal, harapic, biele, blizo, ulinagaj, the waste of imagination and energy which go into these noise-making instruments. Because, as is known, the wauwau must make their presence heard from afar. And it would be no fun to take part with the outgoing year and welcome the new one without the infernal outbreaks or oddity of such instruments, vigorously hampered by a group of die-hard kids. You must see the incredible spots of the wauwau, Marumores and Vranchevci in the national costumes of the wauwau. The unique costumes of the wauwau, Marumores and Vranchevci are the costumes of the Christmas Eve, the costumes specific to the region of Sibiu and Gori.

or another, memories of their childhood referring to this custom. And you should also see the children in order to understand why they are so fond of going from house to house to sing Christmas carols is one of the greatest joys of one's childhood. With their hearts full of gladness, careful not to forget the newly-acquired secret, careful about every gesture and word of the wishing, they are so full of importance in their solemn mission of actually heralding the celebration, excited about their uncommon exploit, that they are almost anxiously waiting for presents. Because the waits are rewarded for their effort. When the feast is over, still with their hearts full of gladness, they are offered what was never long of bread, stries, cakes, nuts and apples. Almost everywhere nuts and apples are still offered as presents to the small wanderers. In certain places, people give gifts to the children. Now, children receive cakes, pie, chocolate and oranges. Anyway, unexpected gifts enhance the joy of the custom.

At the time when this issue of our weekly is released hundreds of thousands of children in Romania wander from house to house, from apartment to apartment with plugusorul, sorceva and with carols, doing their duty of heralds of a better and happier New Year full of joy. Hundreds of thousands of grandparents, of uncles, aunts, of known and unknown people open their front doors and listen to children's wishes and carols which they have known for a long time, since their own childhood and even earlier. A New Year has come. It must bring everyone more happiness, more accomplishments, joy and peace. The photos published on these pages are meant to bring in your houses, too, dear readers, the heralds of the tidings which are as old as the world and as new as every new year. We want them to find you, as the Romanian wish goes, in good health and as strong as steel, blossoming like the apple and pear trees, happy, brightened up by all joys, in peace and harmony. And naturally, we wish you to live many, very many years, always rejoicing in accomplishments and successes, and above all, peace and good health.

Practically it would be impossible for us to survey the extremely varied forms acquired by the custom of wishing on New Year's Eve, depending on the local traditions. It would be difficult for us even to describe the patterns which have been somehow generalized throughout the national territory.



THE "SORCOVA"

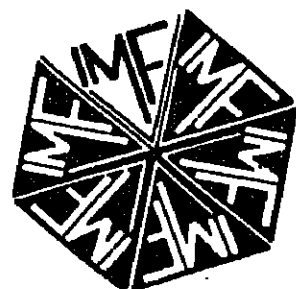
Next to the "pluguor", the "sorcova" is one of the most widely spread customs related to New Year's celebration. Children only, carry the sorcova. What does "sorcova" mean? In the beginning, it was just a mere apple or pear-tree twig, symbolizing the fruitfulness of herds, orchards and fields.

Today, the "sorokova" is made of a wooden stick, suggesting a branchy style. The flowers, decorating it, are bright and vividly coloured: pink and red, yellow and blue. Most often, one can buy ready-made "sorokova" everywhere. But there are still a lot of places where real compositions of creativity are questioned by the "sorokova", in which real masters of this art defend their well-known reputation.

The wall shakes the "sorokova", gently and repeatedly repeating the one the wishing is spoken to, recalling the traditional formula: "May you live and blossom like apple-trees like post-ices in the midst of summer, as strong as alders, as swift as an arrow." And



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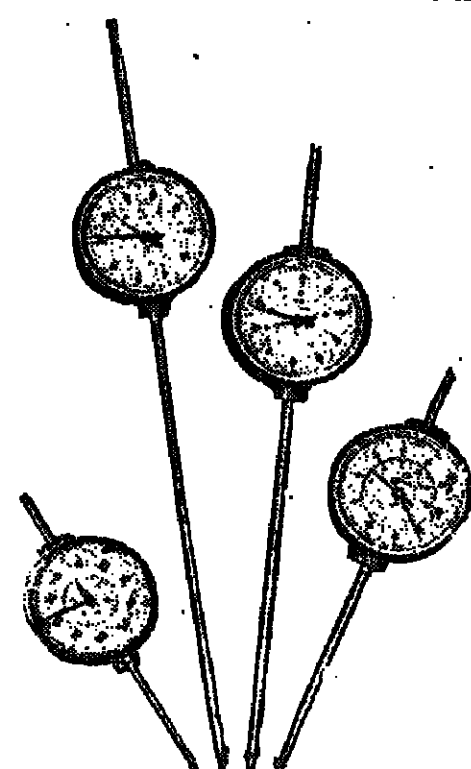
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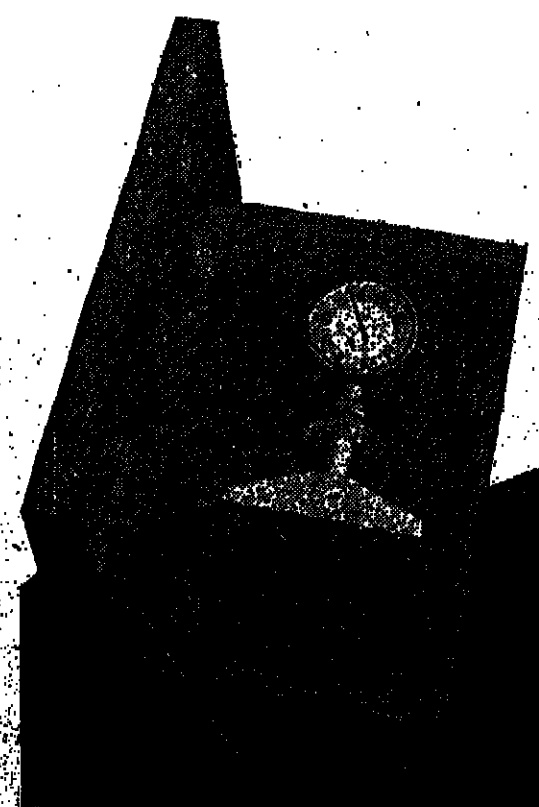
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REMEMBER THE IMF TRADEMARK



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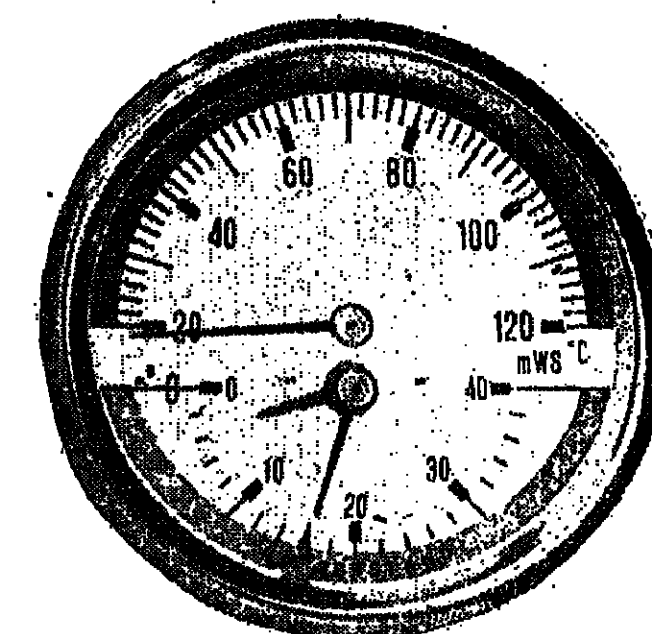
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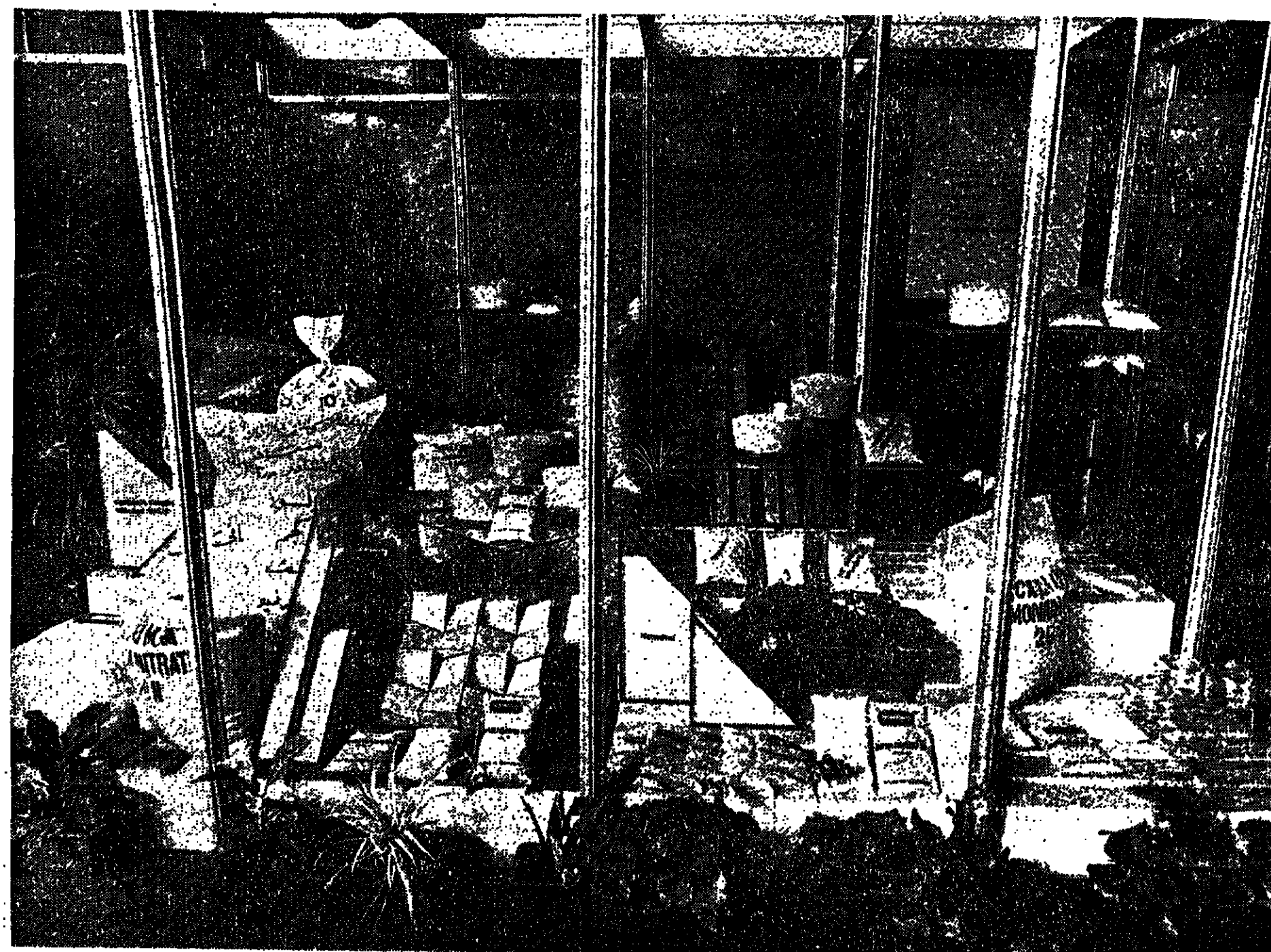
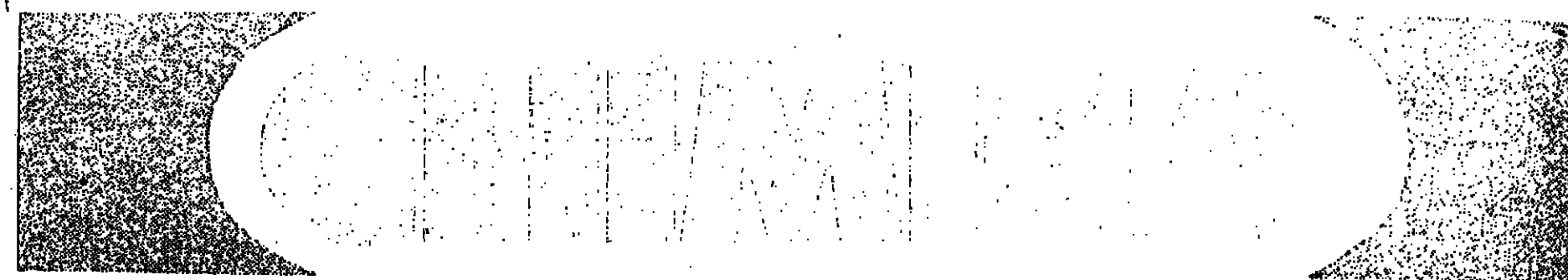
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Marketing Romanian electronic products and services as well as economic cooperation in the field of the electronic industry are carried out by the ELECTRONUM foreign trade enterprise.

ICE ELECTRONUM'S export programme includes the following lines of products:

- Telecommunication apparatuses and equipment, servicing included, starting from design up to training and maintenance. From this line of products mention should be made of: telephones, urban, interurban, international and institutional automated telephone exchanges. Exports of such products to Greece, the USSR, Czechoslovakia and the GDR have become a traditional practice.

- Measuring and control apparatuses, of which ampermetres, voltmeters, wattmeters, electric metres, flow-metres, steam-flow metres, logometres are delivered to Poland, Syria, Iraq, Pakistan, Sudan, the GDR and Czechoslovakia.

- Automation elements, equipment and installations for all the economic and social sectors.

We shall enumerate some subgroups of products: field and panel automation equipment, distribution and control electrical equipment, automated equipment and systems controlling technological processes in all economic branches, transmission and data processing equip-

ment, teletransmission and data processing equipment, machine tools, control equipment, automated testing equipment.

Also on offer are personal installations and equipment as well as turn-key deliveries. Increasing are the deliveries to countries such as the USSR, Egypt, the GDR, Czechoslovakia, Iran, Iraq, Bulgaria.

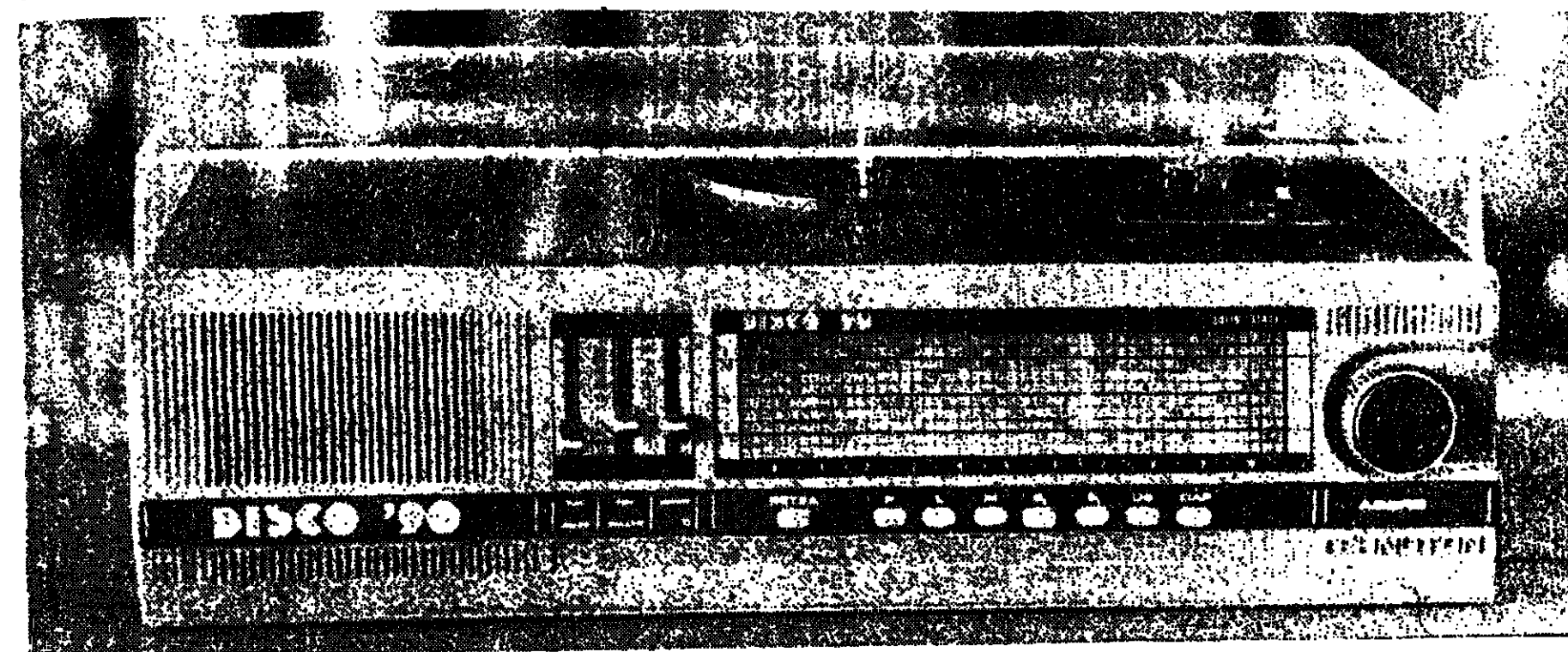
- Computer technology equipment such as: medium-capacity computers, minicomputers, microcomputers, personal computers, graphical systems, invoicing and bookkeeping machines, peripheral equipment. These products are exported to People's China, Czechoslovakia, the USSR, the GDR, Switzerland, Austria, West Germany, the USA.

The electronic components cover a wide range of diodes, transistors, integrated circuits, resistors, condensers, etc and are exported to Bulgaria, Czechoslovakia, the GDR, Poland, France, Italy, the United States etc.

Consumer goods such as radio receivers, radio cassette recorders and tv sets. These products are exported to countries such as West Germany, Britain, the Netherlands, Czechoslovakia, the GDR, the United States.

Also taking place through ICE ELECTRONUM are the export of licences and knowhow, the granting of technical assistance and software.

ELECTRONUM
BUCHAREST - ROMANIA



ICE ELECTRONUM imports a series of equipment, apparatuses, electronic components and various materials for the electronic industry and audio-video consumer goods.

An important partner in the export and import conducted by ICE ELECTRONUM is the Soviet Union.

ICE ELECTRONUM - Bucharest collaborates with the Soviet enterprises V/O ELECTRONORGTEHNICA, V/O STANKOIMPORT, V/O MASHPRIBORINTORG, V/O TECHMASHEXPORT.

ENERGOMASHEXPORT, V/O TEHNPOINTORG, V/O

Supplied to the USSR are adjustable drives for machine tools, automatic telephone exchanges, computer technology, while that country exports to Romania electronic components, technological equip-

ment for the electronic industry, computer technology and audio-video consumer goods.

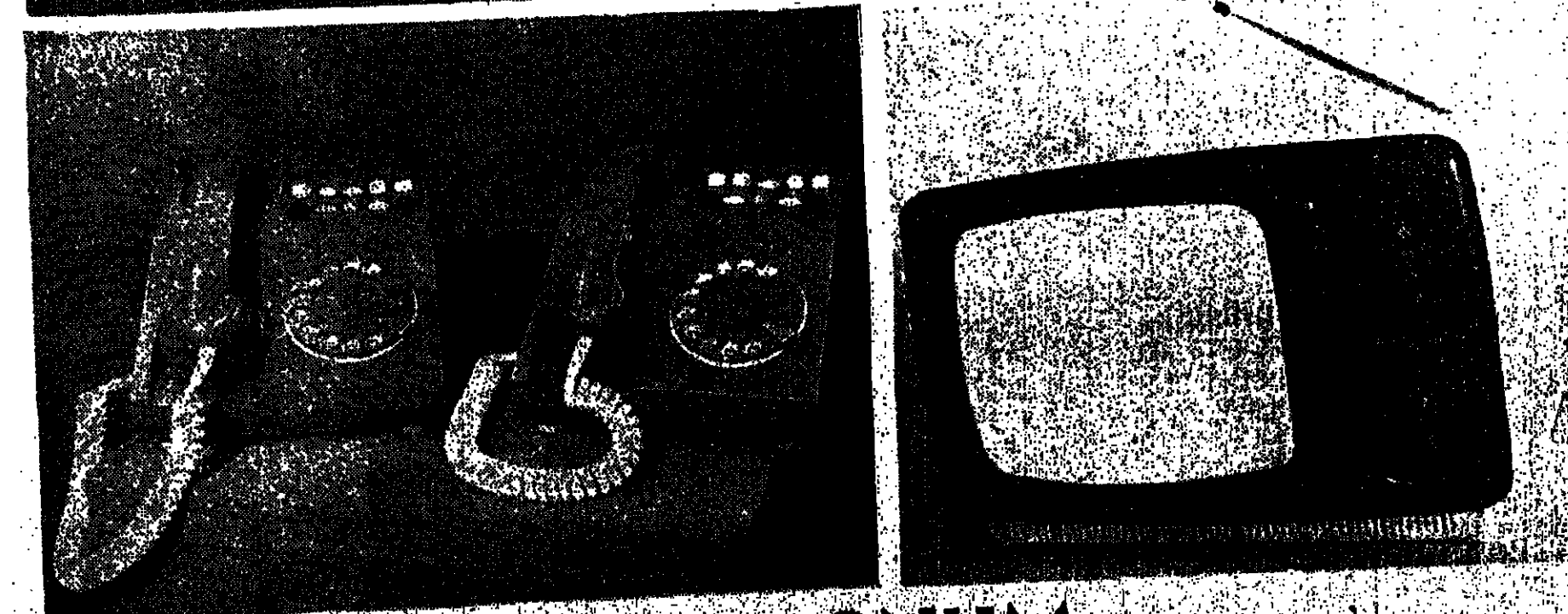
The collaboration with the Soviet foreign trade enterprises also accounts for the cooperation in production, that is Soviet electronic components are used in manufacturing electrical drives, computer technology equipment and automated telephone exchanges to be delivered to the USSR. At the same time very important is the ob-

servance of all delivery dates, especially as concerns the electronic components which are vital to the rhythmical realization of the equipment production plan.

According to annual mutual exchange protocol stipulations, the volume of the exchanges between ELECTRONUM and the Soviet foreign trade enterprises is set to grow every year.

For further information please contact our specialists.

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MINOLTA GREETSS ROMANIA

MINOLTA's philosophy is to view copiers and the technical assistance granted to end users as a whole. It is easy to expect the most of the inventiveness or the products of a big producer, but the fact that a customer takes it for granted that he benefits by the best technical assistance means much more to MINOLTA. This is the reason why copiers, laser printers, telefax and text systems come ever more frequently from MINOLTA.



from design to the industrial capitalization of the product, since a first capitalization (through the faculty's pilot microproduction unit) is fully controlled and guided by the authors of the products — students and professors.

Crossing this stage, the inventor delivers to the large industry not only a solution conceived by him but also an experimental prototype or sometimes a mass-produced item based on a new line, together with the manufacturing technology, itself monitored in the school's microproduction unit.

Romanian scientist Henri Coandă liked to repeat, whenever he was surrounded by young people, in order to spur them towards the act of creation: "Let us not admire completed things, but the human brain at work." Is this not the invention technology proper?

In fact, invention science has exceeded the university realm. This year, last hosted the third edition of the postgraduate school of invention science, an institution improving the technical-scientific training of en-

study.

As far as the diploma is concerned, it is issued only after the student receives an invention characterization from the State Office for Inventions and Trademarks. What are the fruits of this practice? Until the last edition, some 600-800 engineers, technological engineers, foremen, workers had graduated from the invention science school in Iasi. They will be followed by this year's 150-strong class.

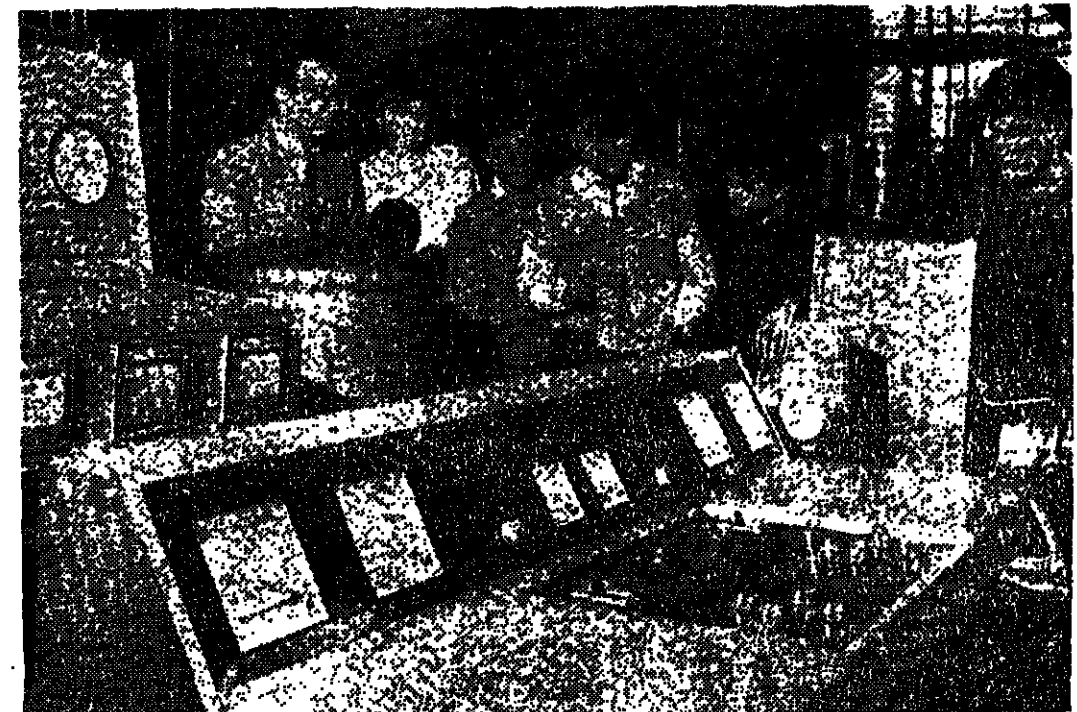
A SKETCH FOR A DIDACTICS OF THE FUTURE

Another dimension of value engineering is provided by the DISROM research-design-production team working at the Polytechnic Institute in Bucharest. The team is headed by associate professor Aurel Bră-

replace them with others. We remodel the set of elements in keeping with the new requirements. And here is a spectacular detail: while the achievement of a conventional device of average complexity takes some 200-250 hours of work (over one month), remodeling the set of devices according to the SEFA-DISROM (Aurel Brăgaru) conception requires between six and eight hours (therefore only a day, or less, of work).

Adding to these advantages are other, equally important ones: 75 per cent metal economy, energy savings, etc.

In conclusion, here are two moments which have become classic: 1975 — the birth of the DISROM team which included the technical personnel, professors and very many students; 1980 — the creation of the first Romanian set of modular elements, a rare performance at the time, when just a few great industrial powers (the Soviet Union, West Germany, Great Britain) could afford to manufacture sets of modular elements.



gineers, technicians and workers. Just as at the previous editions, the participants in the event — held under the aegis of the Invention Science Commission of the Romanian Academy — benefitted by the assistance of reputed scientists, researchers, engineers and experts in the numerous branches of invention science, as well as by the labs or specialized integration units of the Polytechnic Institute in Iasi.

In keeping with the students' training, with their immediate and future technical concerns, the invention school lays down various study themes. This year, for instance, six specialized sections were set up, coordinated by Iasi-based professors: construction, electro-electrical engineering, industrial chemistry, textiles, biomedicine, mechanics. The curriculum included such subjects as the "Psychopedagogical and Educational Bases of Invention Science, Techniques of Creation", "The Cortex, the Seat of Creative Thinking", "The Psychosocial Bases of Technical Creation", "The Technique of Drafting Invention Descriptions", "Modelling, Expression, Improvement with a View to Technical Creation", "Logical Methods and Techniques of Creation".

What happens after graduation? Can one speak of certification of the students as inventors?

"The courses are attended by whoever pleases, but only those who can become inventors", said professor Belous.

In other words, those attending the courses do not automatically become inventors. They must earn this title in future. At the conclusion of the course, together with the attendance certificate and the grade obtained, each participant receives a technical theme which he must solve in a creative way. It is a theme proposed by the enterprise where the student is working or by the school's leadership. The term is one year. Over this period, both the school and the Invention Science Commission of the Romanian Academy provide, on request, technical-scientific advice regarding the theme under

study.

What are the pursuits of this team? Experts know that before an object is mass produced, special tools, devices and verifiers must first be created. But when the series is completed and the object of fabrication is changed, the installations become useless and others must be built.

Taking into consideration this piling up of tools and devices, Aurel Brăgaru has created a series of basic elements from which the devices necessary for production are reconstructed. In this way, several elements make up a device and the totality of elements from which thousands of devices can be built make up a set.

This means a small plant, a pocket factory whose efficiency is unimaginable. All these devices can be built, according to one's needs, into hundreds and thousands of variants.

In the production of a certain item, stopped at a given moment? We no longer throw away the devices in order to

ONE DAY FOR A MONTH'S WORK

The insistent demands of the large industry allowed DISROM to grow into a true national network, with branches in Bucharest, Craiova, Satu Mare, etc. Within the first symposium of invention science held in Iasi in 1984, associate pro-

Photos: Professor Belous (top right) and his students turning to account their ideas in the faculty labs or in collaboration with enterprises both in Iasi and other towns.



fessor Aurel Brăgaru set from the methodological concept SUCCES (system of collective utilization of scientific experience concentrated). The concept can be applied in very diverse fields: farming machinery design, lacquer and dyestuffs film drying kilns, processing for vegetable seed selection, dentures, etc. Several other fields expect spectacular solutions through the use of the new methodology.

Yet the most important merit of DISROM is a new school of value engineering training future experts in the spirit of a new and modern research science.

This implies firm principles of thinking, a logical movement of thinking (information synthesis) doubled by a general science of design.

In keeping with the new methodology, an interesting test was conducted: Students with poor grades were given subjects for diploma papers. They were recommended to apply strictly the new methodology. Surprisingly, unexpected solutions were produced!

The respective methodology can be described as a general science of manufacturing without any manufacturing object. Within this process of elaboration elements of logic of thinking, of logic of creative action appeared. A new didactics — called GIAC (inventive thinking and creative action) was born.

The new GIAC didactics represents the highest level in the evolution of the system of integrating higher education with research and production, favouring, above all, interdisciplinary collaboration, the joint research teams made up of experts from various faculties.

The invention science born in Iasi and the new methodology of Bucharest, together with the GIAC didactics have paved the way towards a new reference system, towards a new scientific methodology without which value engineering cannot exist.

At present and even more so in the future, industry demands complex products which cannot be ensured but through work in interdisciplinary research teams. In order to reach high performance within these teams, one must think and create differently than the past: a new logic of thinking, a new specialized language, a new design.

Maybe even more than the spectacular performance obtained in industry, one should value another aspect born from the application of these new technological design and research methodologies. That theoretical and practical scope opens the succeeding generations of experts for the battle with the far-from-easy exigencies and social commandments of the future, forcing them to align themselves, as early as the first years of higher studies, with the rigours of an anticipatory and flexible education, with a new wave of studying permanently sharpening their intelligence.

A bank of ideas is highly important for ensuring technological and scientific progress. It is not accidental that Academician Octav Onicescu, a front mathematician of the Romanian school of mathematics, used to tell young people around him, students and experts: "Who creates has, who does not create does not exist".

CONSTANTIN LUPU





Recently, the Filmmakers' Association in Romania awarded its prizes for 1987, an opportunity for rewarding last year's best achievements in this field. In the feature film category, the Grand Prix went to Morometii (The Morometii Family) directed by Sergiu Gheorghiu, with a script written by Siera Gulesa based on the late prosewriter Maria Preda's homonymous novel, a major achievement of the Romanian cinema. (Photo above)

The special prize for best script was awarded to actress Gheorghe Dina (for his leading parts in Figurantii — The Figurants, directed by Malvina Ursianu, Culbul de viesel — Vesp Nest, directed by Ion Popescu and Sorinel Iul Nemesiu — Nemesia, directed by Geo Sazescu) and to Adrian Pintea (for his leading parts in Padureanca — The Woodland Girl, directed by Nicolae Margineanu and Vulcanul stins — the Extinct Volcano, directed by George Cornici). The prize for best director went to Malvina Ursianu (for Figurantii) and Nicolae Margineanu (for Padureanca).

The prize for best script was awarded to Dumitru Carabita (for Vulcanul stins and Cincea in zori (Song at Dawn) made for TV by Dina Ursianu). Cameraman Vasile Viti Dragan's contribution to the success of Morometii, rewarded with the prize for photography.

Stirringly different from her previous parts, Mariana Burlui's leading role in Figurantii won her the prize for best actress. Victor Rebucin was awarded the prize for best actor following his remarkable performances as Ilie Morometii.



A reference moment in the activity of the Romanian Opera in Bucharest, the first national lyrical stage, is the Verdi-Kuceri festival, presenting in the second half of December, representative works of the two great composers, included in the institution's repertoire. Therefore a real festival of masterpieces, including the opera Un ballo in maschera, Il Trovatore, Aida, La Traviata, Nabucco, and Norma, by Verdi and Madame Butterfly, and La Tosca by Puccini, the audience having the opportunity to listen to the most valuable soloists of the institution.



The Gulesti Theatre in Bucharest has produced a new premiere: The Master Builder by Ibsen. The show, directed by Tudor Mădăraș, is filled with tension, which forbids a terrible denouement, the unmasking of Solness who has betrayed his conscience.

Actor Virgil Andreescu (Solness) expresses these ideas through angry outbursts rather than through a drama of conscience. The Solness he interprets in keeping with the director's outlook gives the impression he failed to achieve his major work ("a tower castle which will be able to shelter us") owing to external impediments, while in the aesthetic reality he was not hampered by them but by his own, his dominant, thus balancing his vocation. Miss Hilda Wangel, who unexpectedly comes into his life (played by Ana Clotiea) is a devilish woman who relies on her personal charm, on her sensuality, to stimulate his ambitions.

Andra Nicolau is perfectly adequate for the part of Aina Solness showing that she has long understood her husband's drama and loves him for his suffering. Mihaela Almasan as Kaja Post, the accountant who is head over heels in love but devoid of intellectual charm, a false and easy "acquaintance" of the builder, is always on target. So are Florin Dobrovici (Ragnar), who makes to highlight Solness' artistic impetuosity, Constanta Chiriac (Knut), and Monica Trandafir (Dr. Hordal).

The stage design is ingenious in detail of architecture. Emil Potecanu's magnificent music, in perfect harmony with the director's intentions, is a masterpiece. The show is an outstanding achievement of the theatrical company having a varied and significant repertoire, as regards its ideological opening.



Director Mircea Drăgan, the author of twenty films, until the present, has made a pleasant musical comedy — Chirila in Iasi. It is a screen version (the screenplay belongs to Drăgan Olteanu Matei) of a well known play by the Romanian classic writer Vasile Alecsandri, bearing the same title. This movie is in fact a sequel of the film Cicocana Chirila — Madame Chirila, also signed by Mircea Drăgan and proposes to make a satire of the intentions of starting up by means of marriage. Chirila, unsatisfied by boyars Drusur and Cocurici, who would like to marry her daughters Arhila and Calistia, leaves for Iasi with her family to visit her friend Gablita Rozmarinovici, hoping to find better off husbands for them. Two swindlers, Pungescu and Bendiol, disguised as women



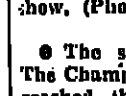
meto in Morometii and Busuioi in Padureanca.

The prize for sets went to scenographer Marcel Bogos (for Figurantii); painter Svetlana Mihalescu won a prize for the costumes in Morometii. Morometii also won the prizes for music (Camelia Tautu) and for editing (Mircea Chelies).

The prize for debut in 1987 was granted to Cristina Nibitius-Mihalescu — director of Padurea de Iag (The Beech Forest). The critics' prize went to Dumitru Carabita, author of the book In cuvinti in imagine (From Word to Image), an interesting apology of the role of the word of the text in the "language" of the seventh art. In the short-real film section, two special prizes were awarded for documentary film to director Ion Bostna (for Cind se aduna pasarii — When Birds Get Together and Pensul colorat — a potolosa? Coloured Feathering — An Ornament?), both of them dealing with the wonderful world of the Danube Delta, and for animated cartoon to Ion Popescu Gopo (for Ampranta — The Fingerprint). A lifetime achievement award went to Virgil Calotescu (for his prize for art or cinematographic film was granted to Virtuziozitate (Virtuosity) by Jean Petrovici and La început there was the Song), a film made for TV by Virgil Calotescu. The prize for scientific film went to Dana Popescu and Florin Cornici for their TV adaptation of Continutul subteran (The Underground Content).



• A new premiere on the playbill of Notara Theatre in Bucharest: The Typhoon by Cao Yu, directed by young Alexandru Dabija. The actors Dana Dugaru, Stefan Radu, Emil Hossu, Alexandra Silescu, Dragos Pitaru, Victoria Caciua and Cristina Sotora appear in the main roles. In a future issue of our magazine we will present a more extensive commentary on the show. (Photo right)



• The show Champion — The Champ by Ion Garmacea reached the 100th performance at the National Theatre in Bucharest.

succeeded in becoming Chirila's protégé, while they attempt to become her suitors. At the last ball the two swindlers are exposed and arrested, and the girls receive their father's permission to marry Drusur and Cocurici.

The film belongs in fact to Drăgan Olteanu Matei. The appreciated actress of the National Theatre in Bucharest found in Chirila a role fit for her and created a character full of humour and plasticity. She is backed, in many appearances, by several actors loved by the public: Drusur, Mihalescu, Ileana Siana, Ileana, Alina Maru, Mihai Folea, Stefan Tapalaga, Jean Cosianu, Cezar Dafinescu, etc. The director's efforts are adequately completed by the music (the transcriptions after Alexandru Flechtmacher and original tunes by George Grigoriu) and by photography (cameraman Ion Marinescu).



The art galleries in Bolognă represent one of the most attractive cultural landmarks of the locality, owing to the presence of a rich collection of paintings, sculptures, and other works of art. The art galleries in Bolognă represent one of the most attractive cultural landmarks of the locality, owing to the presence of a rich collection of paintings, sculptures, and other works of art.



THE STUDENTS' VACATION

• Some 3,000 students will participate in rest and recreation camps at Sinale, Bustoul, Predeal, Vatra Doinei, Ivorul Mureșului, Sălcie Moldova and Felix resorts and in the activities organized during the two vacation periods.

• Another 2,000 students will be present in alpine camps for ski learning and practicing at Gârbova, Clădușel, Tazacelu, Făltănești, Piatra Arșă, Râșcu, etc. chalets or will practice swimming in the Black Sea coast resorts Mamaia and Eforie Nord, (obviously in indoor swimming pools).

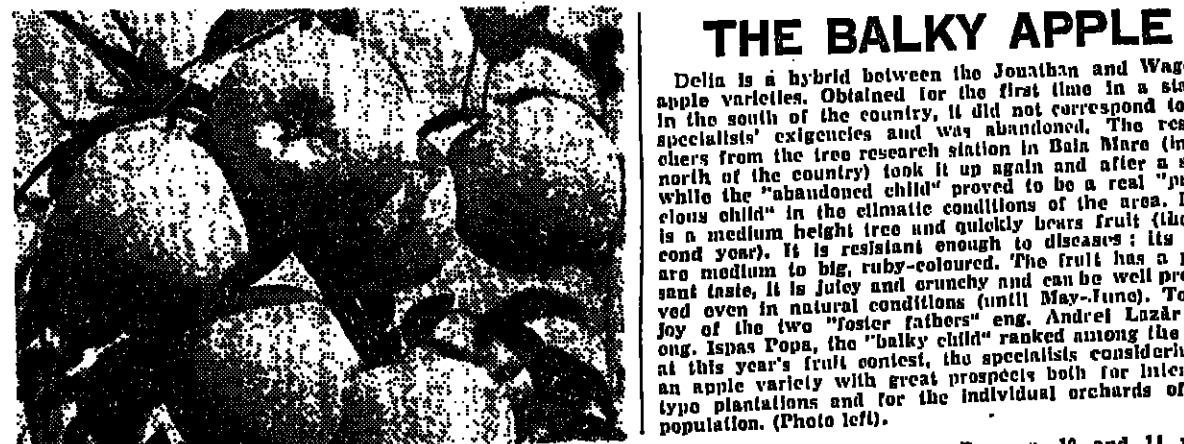
• The tenth edition of the "Amfiteatru" Gala, organized by the student cultural magazine with the same name is carried out these days at the Sălcie Moldova camp.

• In the Sălcie Moldova, Bustoul and Felix camps a number of foreign citizens completing their studies in Romania are also spending their vacation.

• Music and poetry evenings, film galas, shows of the laureates of the Student Art and Creation Festival are organized at creation and culture centres for students and student clubs.

• In all university centres winter tree celebrations will be organized, offering gifts to children of student families.

• In university centres as well as in all rest, alpine and swimming camps New Year's Eve celebrations will be organized for students.

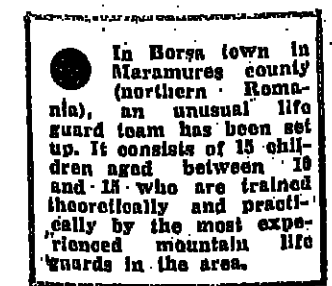


THE BALKY APPLE

Delta is a hybrid between the Jonathan and Wagener apple varieties. Obtained for the first time in a station in the south of the country, it did not correspond to the specialists' exigencies and was abandoned. The researchers from the tree research station in Bala Mare (in the north of the country) took it up again and after a short while the "abandoned child" proved to be a real "prodigy" in the climatic conditions of the area. Delta is a medium height tree and quickly bears fruit (the second year). It is resistant enough to diseases: its fruit is medium sized, but very juicy and can be well preserved (lasts in big, ruby-coloured). The fruit has a pleasant taste, it is juicy and crunchy and can be well preserved even in natural conditions (until May-June). To the joy of the two "balky" fathers, Andrei Lazăr and Joy of the two "balky" children, the specialists considering it at this year's fruit contest, the specialists considering it an apple variety with great prospects both for intensive typological plantations and for the individual orchards of the population. (Photo left).

ARADORA

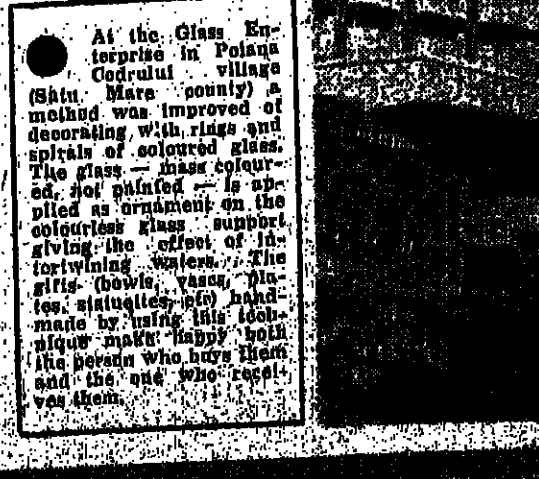
Aradora is the trademark of "Victoria" timepieces in Arad. There, a hundred parts are handled in 900 operations until an alarm clock or a timepiece comes out of the factory's assembly line. A hell, a peeping melody — these are the signals with which these alarm clocks wake some 16 million families of 37 countries every morning. Certainly on New Year's Eve, hundreds of thousands eyes will watch the Aradora timepieces waiting for the moment when this year will end and a new one will begin. (Photo right)



THE HOPE OF THE ELDERLY

Since Hippocrates, specialists and physicians, famous writers, scientists, men of letters and thinkers of all times pointed out the virtues of wines, especially, red wine. For its high contents of iron, polyphenols, active vitamins, and biological principles — vasodilator, antiscorbutic, and even antibiotic — red wine was also called "the milk of old people" or "the hope of the elderly". We should add — while slipping from a glass of Cadareș de Mână — not only that...

After several months of preparations, wines from Cadareș variety (from the famous Mână vineyards, Vatra Doinei county) can be drunk and have a red colour with light green and golden hues. The colour becomes rich and tints. As they get older, the colour becomes rich and tints. Their special taste is given by the proportion, a taste of substance and aroma. It is known that ambrosia was the gods' drink. Undoubtedly, the gods did not know the miracle called Cadareș.



A HOT TOAST

For the members of the Orizont mountain tourism club belonging to the youth club in the town of Chirila, the New Year's Eve 1988 is a new occasion for mountaineering. Sixteen young people (boys and girls) led by Stefan Tagher will spend the New Year's Eve in a refuge in Rodna Mountains. Considering the difficulty of the route, the young team trained a lot previously, among other things, in all mountaineering contests carried out in the country this year. After reaching the respective refuge (after 8-10 hours of climbing) the girls will set the table with the traditional Romanian dishes, while the boys will prepare their favourite drink — tea. With it they will propose a toast at midnight. That is indeed a hot toast!



A CAREFUL HORSE

The national centre for horse breeding and qualification of purebreds — Tacuș stud farm (Bacău county) is the only centre where the Tacuș horse is raised as a pure breed since 1930, achieving at the same time its maximum and the increase of the traction capacity. All these in conditions of maintaining the characteristics of perfect adaptation to the harsh conditions of the mountain area.



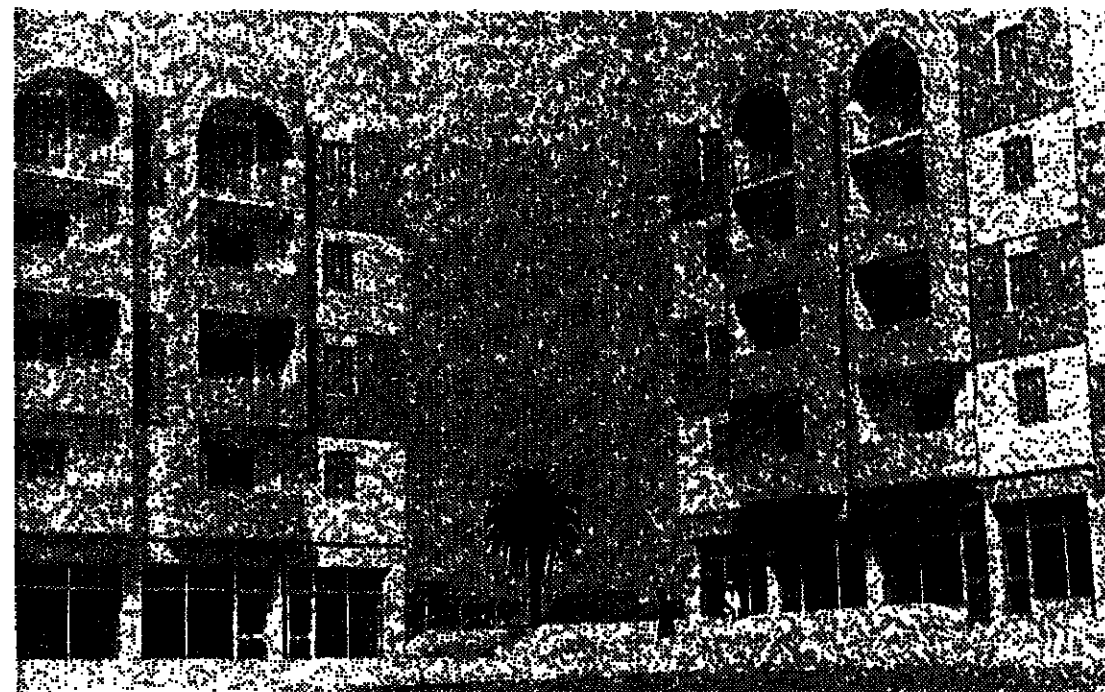
Pages 3, 10 and 11 were written by M. Soareanu, C. Lăzăreanu, V. Chiriacu, M. Rădulescu, V. Ursescu, C. Baran. Photos: AGERPRES, E. Di Chiesanu and M. Soareanu.

MONTANA

In the centre of Sinale (town), a well-known mountain resort at the foot of Bucegi Mountains at an altitude of about 800 m, Montana hotel is awaiting the New Year's Eve guests. Right behind the hotel is the terminus of a cable car line. The other terminus lies at the 1,400 m altitude, near Alpina hotel. From there, another cable car takes tourists onto the Bucegi Mountains plateau, where several ski runs filled with ski lifts have been laid out.



ROMANIA IN THE WORLD • ROMANIA IN THE WORLD



ROMANIAN BUILDERS

For over two decades now, Romanian construction-erection enterprises specializing in various fields have been required to work in numerous countries. Over this period, the range of activities just as the array of services offered to foreign and users has been continuously enlarged, as an evidence of the high qualitative level reached by the works performed, said engineer Ion Militaru, Deputy Minister of Industrial Construction, head of the Department for Overseas Construction. Industrial, urban development, housing, socio-cultural and agro-technological constructions, land improvement and river training works, well drillings, etc. are carried on by both the Department's own units — the Roma-

nian Construction and Erection Company — ARCOM, the Romanian Enterprises for Overseas Land Reclamation — ARCIF, the Study and Design Centre for Overseas Construction — ROMPROIECT, and by other foreign trade enterprises specializing in construction in the fields of road, rail, water and air transportation (CONTRAN-SIMEX), electric power (ROMELECTRO), geological oil and mining drilling (ROMEXPLOR-GEOMIN), etc., whose activity is coordinated by the Department.

Over this interval, Romanian constructors have completed or are still engaged in some 150 joint ventures in over 80 of the world's countries — most of them developing, our colleague went on, adding that the total amount of works developed by Romanian construction is about 40 times, in cooperation with the firms in the beneficiary countries. Romanian constructors erected oil refineries in India, Pakistan, Syria, Jordan, Turkey; chemical and petrochemical enterprises in Egypt,

Turkey, Iran, Yugoslavia, Syria; cement factories and woodworking plants (in Iraq, Egypt, People's China, Yugoslavia, the DPR of Korea, etc., and in Nigeria, the Central African Republic, Iran, Sri Lanka, respectively); numerous other economic projects as well as social, cultural and sports ones in such countries as the DPR of Korea, Iraq, Syria, Egypt, Czechoslovakia, Austria, Greece, the GDR, West Germany, Mongolia, Sudan, Libya, Peru.

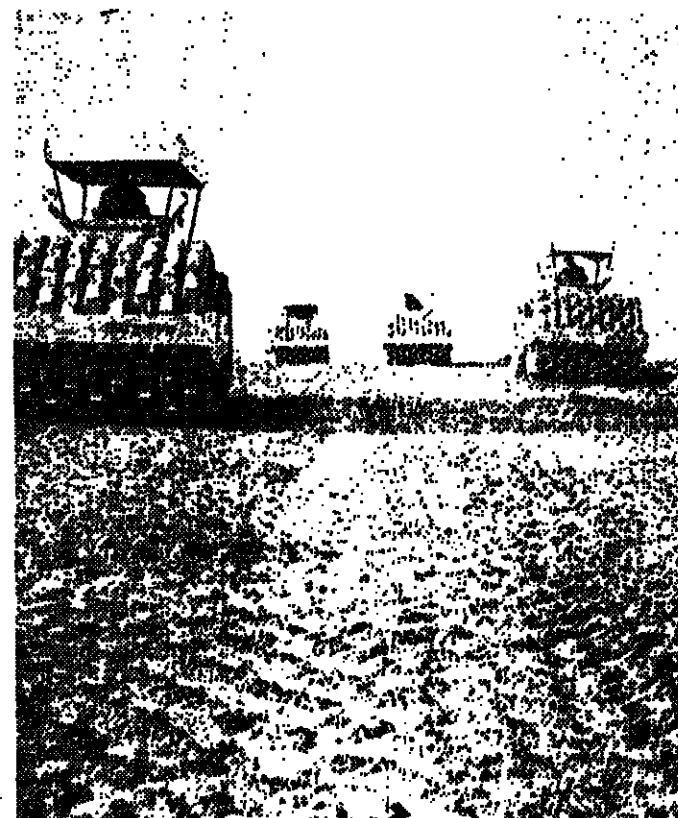
Thousands upon thousands of Romanians constructors are currently working abroad, materializing a suite of cooperation contracts concluded recently, engineer Ion Militaru continued, stressing that the most important conventions of this

kind are translated into fact with partners in the USSR and they concern the participation in the construction of economic units such as the mining works enriching the acid iron ores at Kryvol Rag and the natural gas processing complex at Sovetsk. Several other cooperation contracts with partners in Egypt, Iraq, Libya are under way, some of them being in an advanced stage of completion, said the head of the Department for Overseas Construction, adding that in the current quinquennium (1986-1990) the amount of works carried out by Romanian constructors abroad is 2.5 times larger than in the previous interval.

ARCIF — COOPERATION

The Romanian Enterprise for Overseas Land Reclamation — ARCIF specializes in irrigation, dewatering, drainage, damming, river training, soil erosion control, water wells, sewerage, water supply, in the construction of water treating stations, hydro-technical works, agro-technological buildings, etc. To this end, ARCIF cooperates with Romanian research, study and design institutes such as ROMPROIECT (Study and Design Centre for Overseas Construction), ISIFP (Study and Design Centre for Land Reclamation Works), ICITP (Institute of Research and Technological Engineering for Irrigation and Drainage).

Of ARCIF's recent achievements abroad we could mention: complex land reclamation and irrigation works over a 37,000-ha area at Rakka (Syria) and over 38,000 ha at Hilla Kili (Iraq); the Saddam project for irrigation in Iraq, comprising land reclamation works over an area of 10,000 ha, at Kicksuk; the execution, in the same place, of a 31-km branch drain and a 28-km main drain; the working out of studies and designs for land reclamation works on an area of 100,000 ha in the Balikh river basin and for fish farms in Iraq; the execution of drillings for water supply in Zambia, the DPR of Yemen and Libya; the delivery of hydrological and hydraulic studies and designs in Syria, Iraq, a.s.o.



Offset works for irrigation canals in Syria. Top left: blocks of flats built in Algeria. Left: a cement factory raised in Iraq. Bottom: rolling stock repairing workshop in Egypt.

THE TROPHIES OF QUALITY

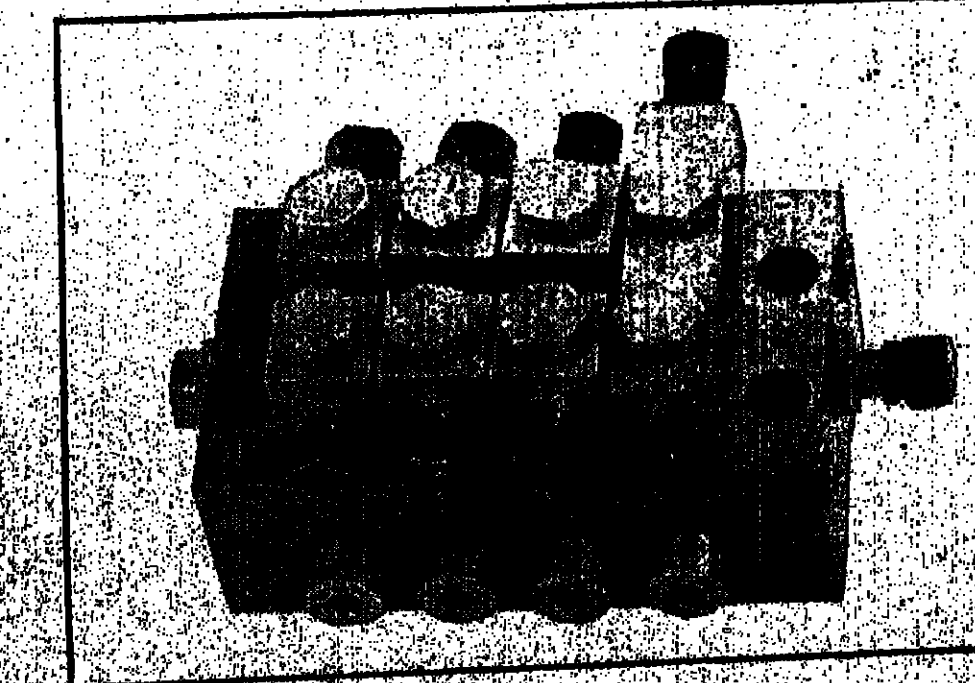
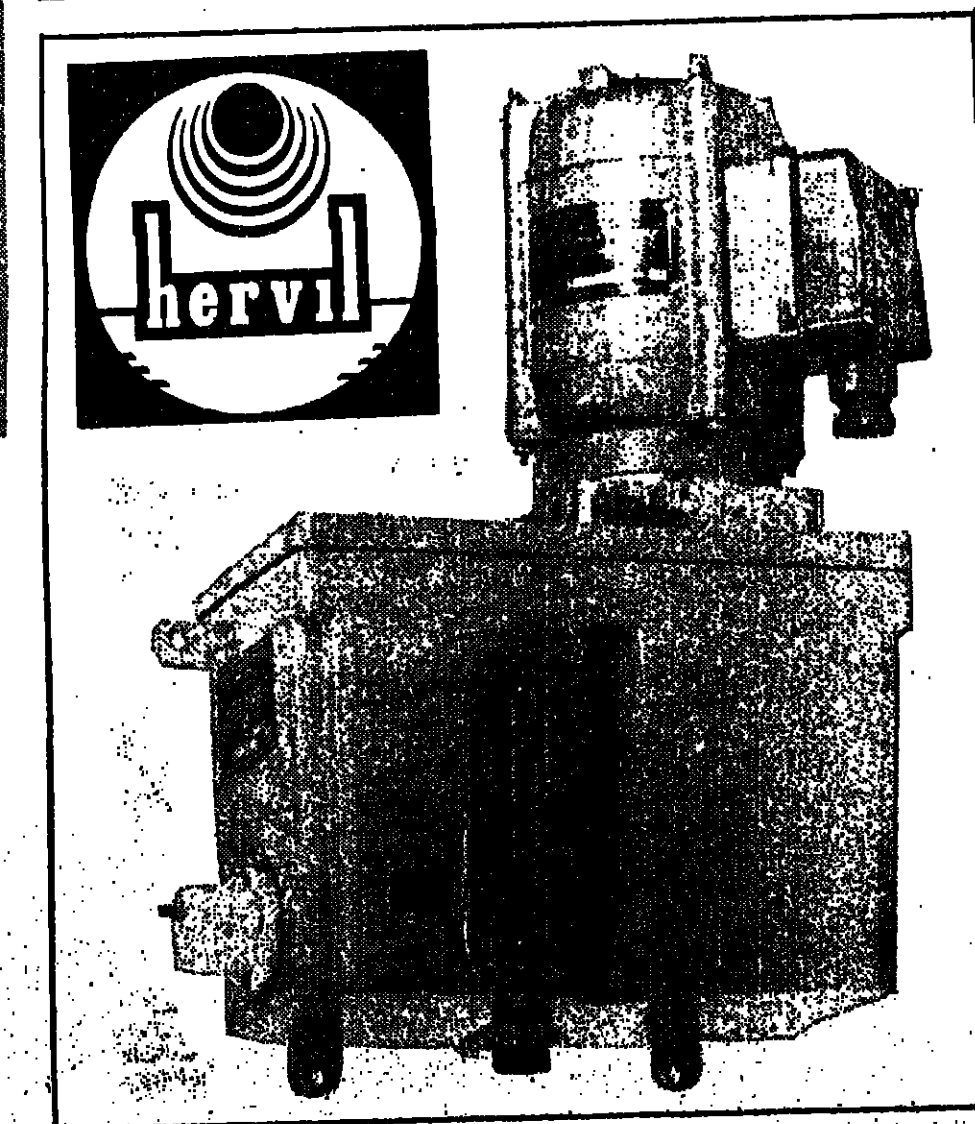
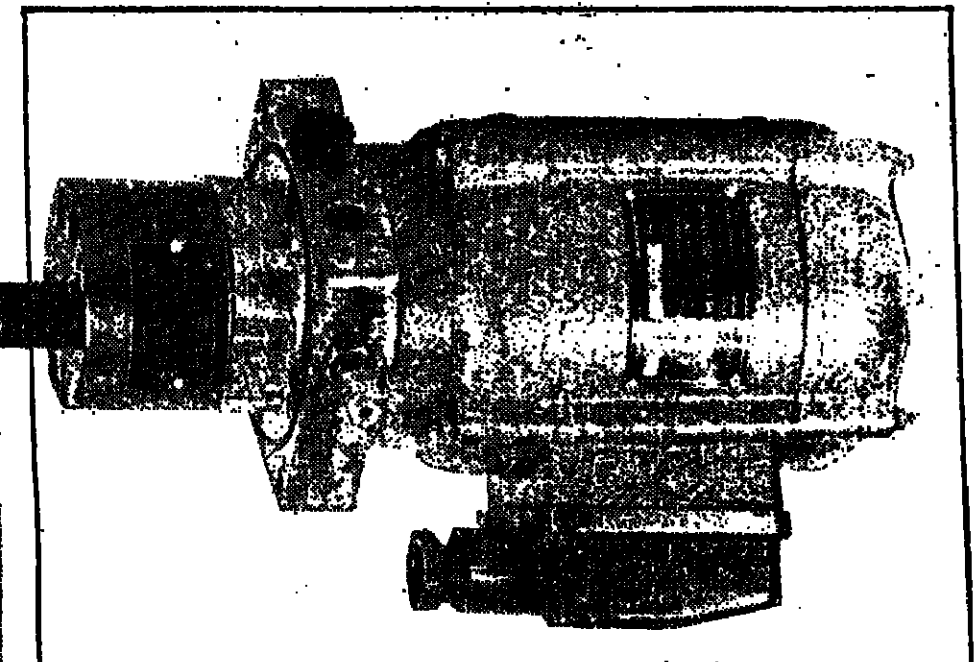
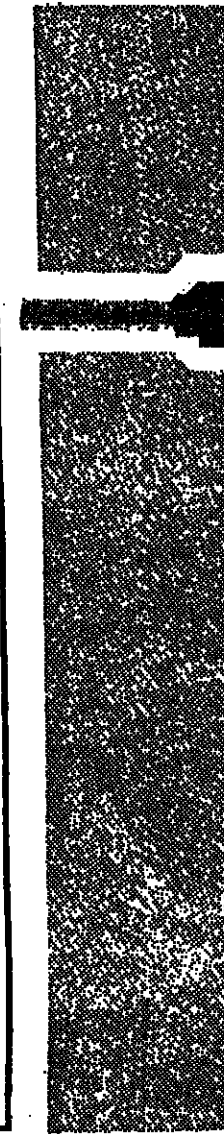
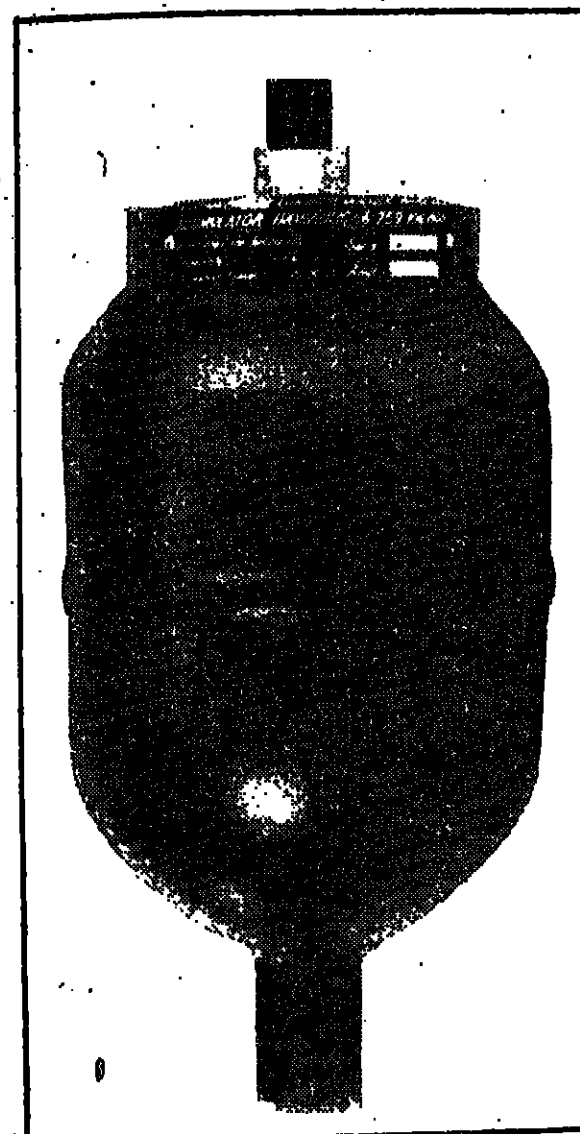
ARCOM is a Romanian foreign trade enterprise well known abroad and collected a exclusive mounting-erection-installation works at complex industrial or civil projects. An international contractor, acknowledged in many European, Asian and African countries owing to the high quality of works executed, ARCOM holds important distinctions. The International Promotion Prize, awarded (in 1973) by the International Promotion and Prestige Institute of

Geneva, the "Trophy for Quality" and the "Trophy for Export" granted by the Editorial Office Jury in Madrid (1976). The range of services offered by ARCOM is very complex including construction-mounting works for industrial projects in all branches, civil construction of all kinds, as well as a wide range of engineering services (feasibility studies, design, construction, technological, technical assistance and expert appraisals, etc.).

Among the more important projects carried out with the participation of ARCOM, specialists there are: Baniya refinery (Syria), Al Qaim and Al-Jar cement factories (Iraq), modern slaughter house in Baghdad (Iraq), a large apartment building (Libya), Algeria, USSR, West Germany, Libya, etc. ARCOM also executes telephone exchanges in Iraq and electric thermopower plant in Maldives. ARCOM also executes water supply and sewerage works in West Germany, the GDR, Spain, etc. ARCOM also executes repair workshops for trucks and goods cars, etc. ARCOM also executes repair workshops for trucks and goods cars, etc. ARCOM also executes repair workshops for trucks and goods cars, etc.

THE HYDRAULIC EQUIPMENT ENTERPRISE

IN RIMNICU VILCEA — ROMANIA MANUFACTURES A WIDE RANGE OF PRODUCTS AS FOLLOWS:



- ELECTROHYDRAULIC SERVOVALVES
- DIRECTIONAL CONTROL HYDRAULIC EQUIPMENT
 - valves
 - directional valves
 - controllers
 - regulating valves
 - needle valves
- HYDRAULIC EQUIPMENT FOR CLAMPING SEMIFINISHED PRODUCTS ON MACHINE TOOLS:
 - work supports
 - swing clamps
 - minor cylinders
 - collet chucks
 - high pressure hand pumps
 - vices
 - pumping systems
- FILTERING EQUIPMENT:
 - suction filters
 - pressure filters
 - return filters
- PNEUMOHYDRAULIC ACCUMULATORS AND ACCESSORIES
- HYDRAULIC CYLINDERS
- HYDRAULIC PUMPS
- LUBRICATING EQUIPMENT:
 - progressive lubricators
 - volume lubricators
 - oil lubricating devices
 - grease lubricating devices
 - two-way lubricating devices
 - resistances
 - injectors
 - safety and non-return valves
- VARIOUS HYDRAULIC EQUIPMENT

The Hydraulic Equipment Enterprise in Rimnicu Vilcea offers technical assistance for the products ordered, upon request. Moreover, it can design new products, in keeping with the end users' needs.

EXPORTER

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nian Construction and Erection Company — ARCOM, the Romanian Enterprises for Overseas Land Reclamation — ARCIF, the Study and Design Centre for Overseas Construction — ROMPROIECT, and by other foreign trade enterprises specializing in construction in the fields of road, rail, water and air transportation (CONTRAN-SIMEX), electric power (ROMELECTRO), geological oil and mining drilling (ROMEXPLOR-GEOMIN), etc., whose activity is coordinated by the Department.



electroexportimport

A NAME
TO BE REMEMBERED
FOR THE DIVERSITY
AND QUALITY
OF THE PRODUCTS
IT EXPORTS:



● ASI three-phase asyn-
chronous motors: output: 0.25-90
kw; voltage: 220-660 v; fre-
quency: 50-60 cycles; squirrel
cage rotor; mounting arrange-
ment: B3 (DIN 42673) or B5
(DIN 42677); protection: IP44
(DIN 40050)

● AF three-phase asyn-
chronous motors: output: 5.5-90
kw; voltage: 380 v; frequency:
50-60 cycles; wound rotor with
permanently applied brushes;
mounting arrangement: B3 (DIN
42673) or B5 (DIN 42677); pro-
tection: IP44 (40050)

● ASA explosion-proof mo-
tors Ex d.3n.G4; output: 0.8-90
kw; voltage: 220-660 v; fre-
quency: 50-60 cycles; squirrel
cage rotor; protection: IP54

machines, vacuum cleaners,
fans, coffee grinders

● Single-phase electric mo-
tors with centrifugal starting
relay: 1 or 2 speeds, 0.25 kw/
1,500 rpm, 220 v

DC motors: MCG type - for
general appliance; output:
4 kw-280 kw; MCU type - for
machine tools; output: 3.25
kw-200 kw; Mill motors MCM
type - series 802-808; output:
3.7 kw-75 kw

DC motors with axial air gap
and disk rotor, output: 180 w;
370 w; 750 w; 1,200 w; 1,500
w; 2,200 w; 4,000 w; 5,500 w

● Welding converters: CS
125 A, CSCA 250 A, CS 315 A;

CS 350 A, CS 3 (350 A), CS 5
(500 A)

● Welding sets with Diesel
engine - GST 350 A, GST 500 A

● General sets powered by
Diesel engines, stationary or
mobile: 4 kva; 7.5 kva; 10
kva; 15 kva; 20 kva; 38 kva;
80 kva; 125 kva; 150 kva

● Synchronous generators:
231 and 400 v, 50-60 cycles, of
5 kva; 6.2 kva; 7.5 kva; 15
kva; 30 kva; 38 kva; 40 kva;
50 kva; 80 kva; 125 kva; 150
kva

● Medium-frequency con-
verter sets: GEF-AV, 50 kw,
8,000 Hz; GEF-AV, 56 kw, 8,000
Hz; GEF-AV, 100 kw, 8,000 Hz;
GEF-AV, 110 kw, 8,000 Hz; GEF-
AV, 125 kw, 2,500 Hz; GEF-AV,
300 kw, 2,500 Hz; GEF-AV, 300
kw, 8,000 Hz

● Distribution transformers:
rated power: 25-1,600 kva, ra-
ted voltage: 6-35 kv

● Power transformers and
autotransformers: rated power:
2,000-400,000 kva; rated vol-
tage: up to 400 kv

● Medium and high-voltage

age: 6-35 kv and 110 kv; sym-
metrical breaking capacity:
250-3,000 Mva; b) small oil ve-
lumes, type 10 (Delle Alsham-
France Ilicona): rated voltage:
6-20 kv; symmetrical breaking
capacity: 250-500 Mva; c)
ditto for the rated voltage of
66, 110, 220 and 400 kv; d) oil
contactor type CAM, 6 kv,
100 a

● Disconnecting switches: a)
Indoor use (SMI-STB); rated
voltage up to 35 kv; rated cur-
rent up to 6,300 a; b) outdoor
use (SME-SIE-STEP); rated cur-
rent up to 400 kv; rated load
break switches, type STIS; rated
voltage up to 20 kv; breaking
capacity up to 7 Mva; d) pan-
tograph type PHAF-1/110/2000

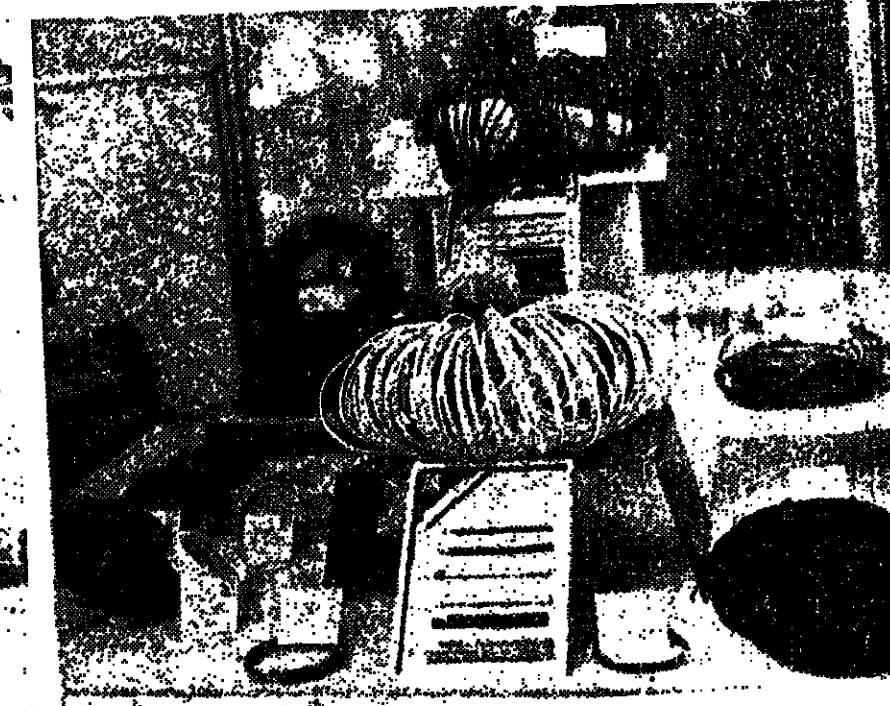
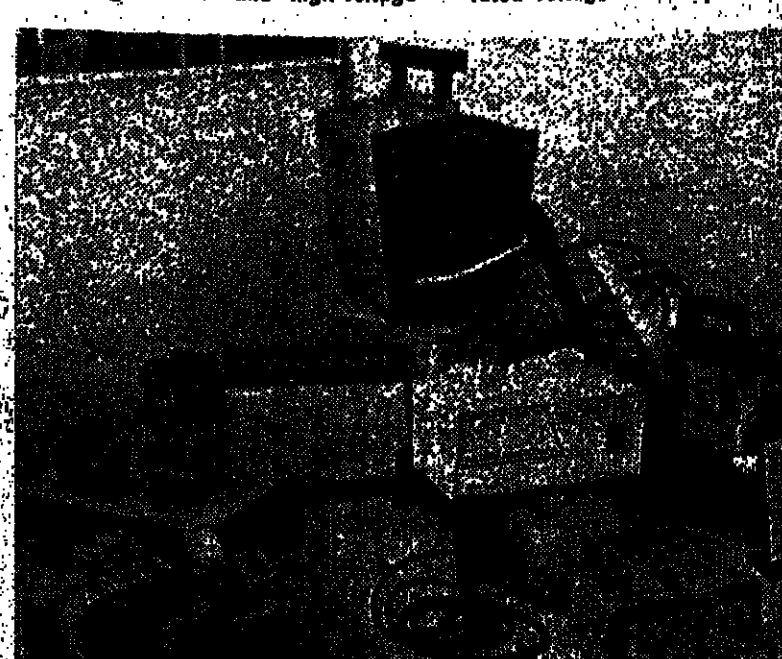
● Instrument transformers:
a) current transformers: 1. plas-
tic insulation (types CIS, CIT);
2. synthetic resins (type CIR5);
rated voltage up to 35 kv, for
indoor use; 3. ditto, types CIR-
CIRTA, CIRTI; 4. oil types
(CESU and CESI); rated voltage
up to 400 kv, for outdoor use;
b) voltage transformers: 1. syn-
thetic resins (type TIRMO, TIRBO)
volume, type IUP, rated vol-
tage up to 35 kv single

washing machines 2/12 poles,
2/16 poles, refrigerators, sewing
(40050) for operation in explo-
sive ambience

● Three-phase asynchronous
motors of large output: output:
110-1,000 kw; frequency: 50-60
cycles; squirrel cage rotor; low
voltage: 220-660 v - MIB, &
MAB; high voltage 3.3-6 kv -
MIB & MAB; MUB & MEB;
wound rotor: low voltage: 220-
660 v - MIF & MUR; high vol-
tage: 3.3-6 kv - MIF, MAR,
MUF & MEP; mounting ar-
rangement: B3 (DIN 42673) and B5
(DIN 42677); protection: IP23
or IP44 (DIN 40050)

● TAM three-phase asyn-
chronous motors: output: 0.25-7.5
kw; voltage: 220-500 v; fre-
quency: 50-60 cycles; squirrel
cage rotor; mounting arrange-
ment: B3 (DIN 42673), B5 (DIN
42677) and B14 aluminium cas-
ing

● Single-phase electric frac-
tional horse power motors for



or double phase build for indoor
or outdoor use; 2 oil type
(TEMU-TEBU and TECU) rated
voltage up to 400 kv single or
double-phase build for outdoor
use

● Medium-voltage fuses: ra-
ted voltage up to 35 kv; rated
current up to 100 a; indoor use
(type FI) outdoor use (type FE)

● Prefab cells for indoor use
for transformer stations up to
20 kv

fluor lighting fittings for
lamps

mercurizing fittings for

● Li-
vehicles fittings for motor

● Lante

● Accum

● Electric

● Electric refrigerators with
compressor

● Electric home appliances:
washing machines, oil radi-
ators, electric hot plates, flat
irons, vacuum cleaners, hair
driers, electric coffee grinders,
turbine radiators, window fans,
table fans, attachments set for
MG4 drilling machines, other
electric heating appliances,
household electric pumps

● Electroinsulating materials:
textolit; sticlutolit n.o.

● Electric cables and con-
ductors: Aluminium conductors
for overhead lines; Steel-core
aluminium conductors; Rubber-
insulated-shielded flexible ca-
bles, type NH, NMH, NSH;
Copper and aluminium PVC in-
sulated conductors according to
DIN-BS-NF-VDE; Telephone ca-
bles; Signalling cables; Cop-
per and aluminium power ca-
bles, armoured and non-armour-
ed, of 1.6 and 10 kv; insula-



● Reactance coils, type BR
standard: Incandescent lamps,
vacuum lamps, starters and fluo-
rescent lamps for mercury and fluo-
rescent lamps

● Power capacitors: a) mi-
neral oil (type CU); rated vol-
tage: 0.380-0.500 kv; rated
power: 10-15 kva; three phase
build indoor mounting; b) chlo-
rinated oil, type CS; rated vol-
tage: 0.380-0.500 kv; rated po-
wer: 15-20 kva; three-phase
build; indoor mounting

● Low-voltage gears for in-
dustrial purpose and housing
installations: (contactors, re-
lays, circuit breakers, push bu-
tons, normal fuses, transformers,
high rupture capacity low-vol-
tage fuses, switches, sockets etc.)

● Lifts

● Dry cells and electric bat-
teries

● Lighting sources: High
pressure mercury vapour lamps,
auto bulbs, fluorescent lamps



tion: PVC, polyethylene or pa-
per (mass-impregnated and
mass-impregnated-non-drawing)

● Equipment for electrotech-
nical industry manufactured in
one place or small series.

FOR DETAILED INFORMATION,
PLEASE CONTACT



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